

PURCHASING

DECEMBER, 1950

PUBLIC LIBRARY
DEC 13 1950
DETROIT

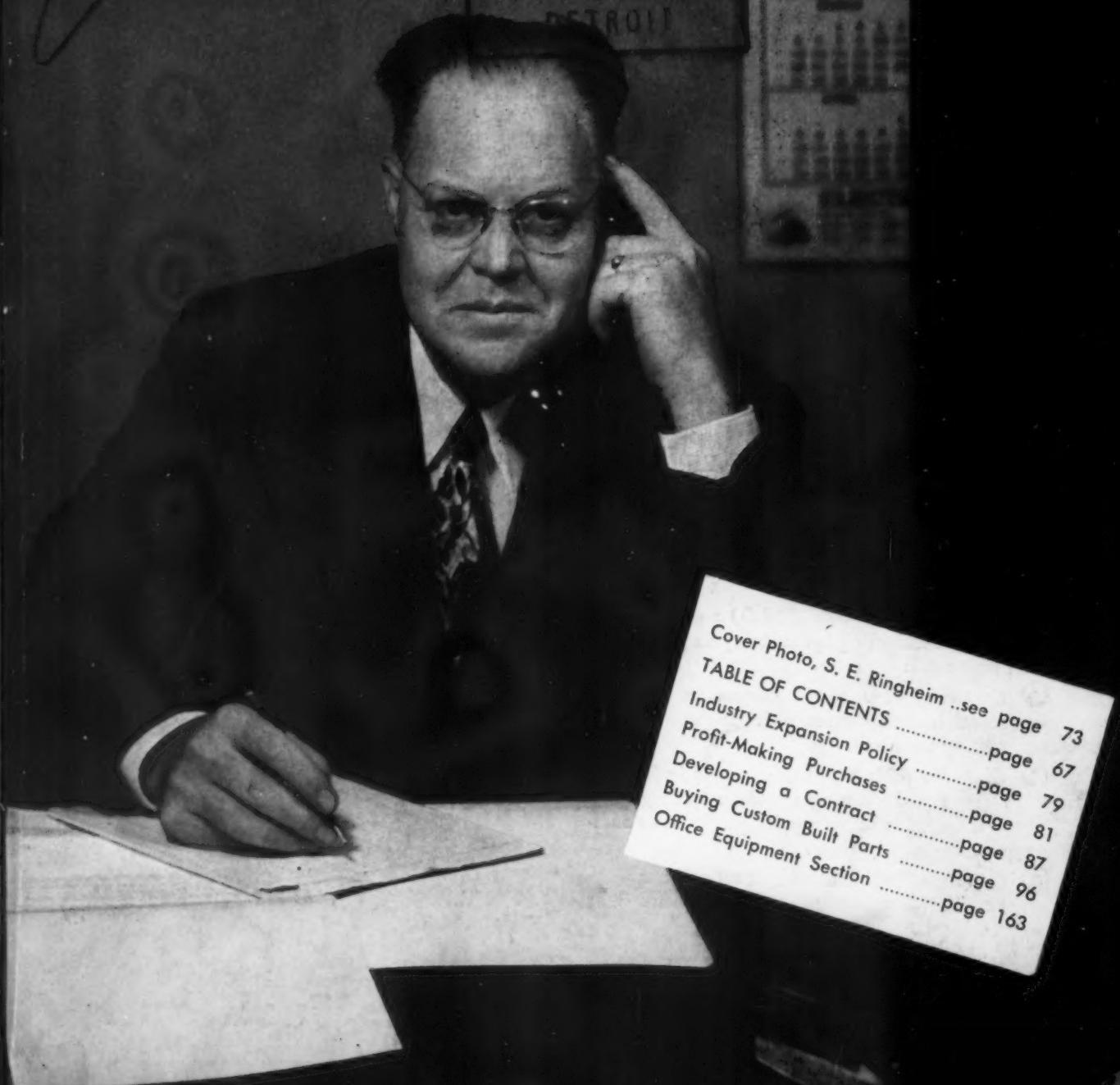
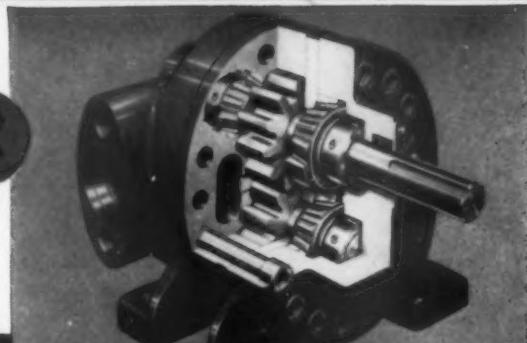


TABLE OF CONTENTS	
Cover Photo, S. E. Ringheim ..see page	73
Industry Expansion Policy	page 67
Profit-Making Purchases	page 79
Developing a Contract	page 81
Buying Custom Built Parts	page 87
Office Equipment Section	page 96
	page 163

A CONOVER-MAST PUBLICATION • 50 CENTS

3 EXAMPLES OF SAVINGS in Hydraulic Operation



...when rust,
sludge and
foam were
eliminated by

TEXACO REGAL OILS (R&O)

When *Texaco Regal Oils (R&O)* replaced other brands in the following hydraulic operations, this is what happened:

● *Customer #1**: Saved more than \$2,000 a month in the operation of five Ingersoll process milling machines.

● *Customer #2**: Saved in one year in just one die casting machine: 1,800 gallons in pump repairs, produced an additional 10 castings.

● *Customer #3**: Reduced hydraulic oil consumption on some 80 hydraulically operated

Everywhere, *Texaco Regal Oils (R&O)* assure smoother hydraulic operation, longer pump life, less machine downtime, lower maintenance costs. These turbine-grade oils are specially inhibited and processed to eliminate rust, sludge and foam. They *keep systems clean!*

Let a Texaco Lubrication Engineer help you gain similar cost-saving results in *your* plant. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

* * *

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

*Name on request

TEXACO Lubricants, Fuels and Lubrication Engineering Service

Entertainer MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

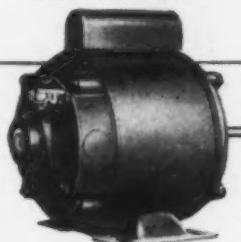
Century 1/8 TO 3/4 H. P. MOTORS

Choose From These Many Types
to Fit Your Job

**HEAVY-DUTY for Industrial and
Appliance Use**

From Century's wide range of types and sizes, there's a proper motor for all popular applications. You can be confident that the right Century motor will assure a long life of satisfactory performance.

Shown here are examples of Century's line of FRACTIONAL HORSEPOWER motors—ruggedly built for smooth, quiet operation, with a remarkable freedom from vibration.



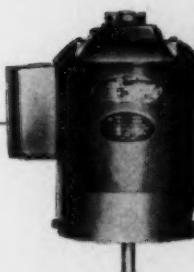
TYPE CSH — Capacitor Start Induction Single Phase Motor suitable where high starting torque and normal starting current is satisfactory.



TYPE SP — Split Phase Induction, Rigid Base, Single Phase Motors suitable for light starting duty.



TYPE SC — Squirrel Cage Polyphase Motor built in fractional sizes for all torque requirements.



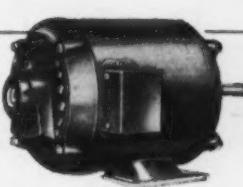
JET PUMP MOTOR — Capacitor Start Single Phase Motor available in sizes for practically every jet pump application.



TYPE SP — Split Phase Induction, Cushion Base, for quiet operation.



OIL BURNER MOTOR especially designed for this service. Compact, rugged; smooth, quiet starting and running.



TYPE RS — Repulsion Start Induction Single Phase Brush Lifting Motor suitable for applications requiring high starting torque and low starting current.



TYPE DM — Direct Current built in sizes and ratings for applications where direct current is available or its use desirable.



UNIT HEATER MOTOR provides smooth, quiet performance throughout a long service life.



GEAR MOTOR, compact, rugged, ball bearing equipped, for your high torque, slow speed requirements.



CENTURY ELECTRIC CO.

1806 Pine Street
St. Louis 3, Missouri

-682

OFFICES AND STOCK POINTS IN PRINCIPAL CITIES

RESEARCH KEEPS

B.F.Goodrich

FIRST IN RUBBER



New paint hose prevents paint discoloration

A typical example of B. F. Goodrich improvement in rubber

PAINT discoloration from the hose is caused by strong solvents in the paint that rot and flake the black tube of the hose. B. F. Goodrich engineers have studied the problem and come up with a new tube—gray in color, resistant to solvents.

New tube is light gray—B. F. Goodrich developed a recipe for a gray rubber tube that handles paints, varnishes, lacquers, varnish thinners, synthetic enamels, oils, gasoline, kerosene and fuel oil. Will not flake or clog spray guns. Even with minor reactions

from extra strong solvents, gray rubber does not discolor paint as much as black rubber.

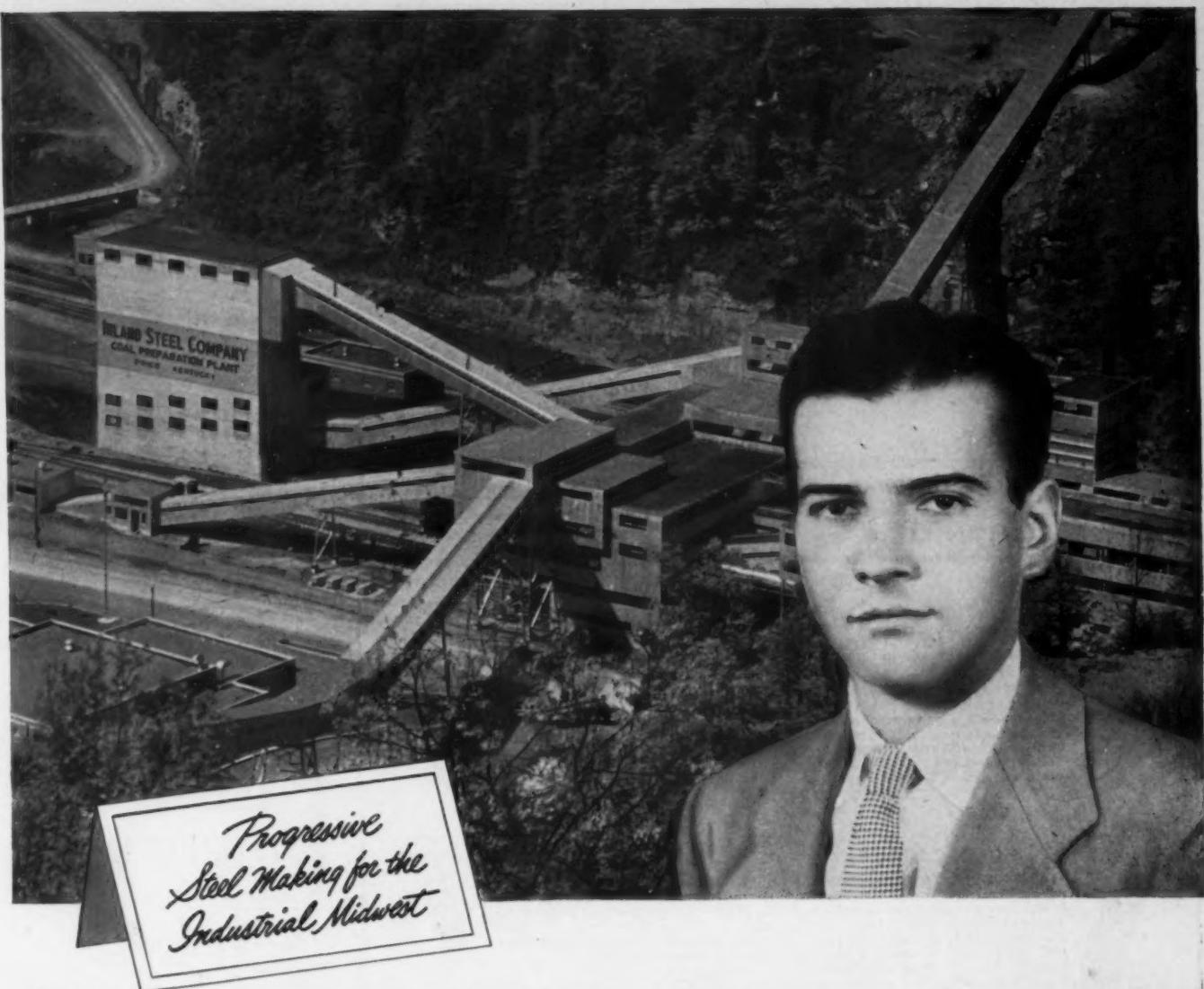
Cover is oilproof—Black, smooth rubber cover resists solvents, won't check or crack from sunlight or heat. Use it around oily machines, over surfaces that are covered with oil or solvents.

This new B. F. Goodrich paint spray hose is light, flexible, easy to handle. Largest size weighs only .19 pounds per foot. Available in six stock sizes to handle pressures as high as 225 pounds.

Special reattachable fittings available.

No paint hose is absolutely discoloration-proof when paint is allowed to remain in it for hours while not in use. But this new hose with a gray tube will eliminate most of the dangers of costly discoloration and in most cases will actually prevent it. Your local BFG distributor can make immediate delivery. Call him for more information, or write direct to *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio*.

B.F.Goodrich
RUBBER FOR INDUSTRY



"WE GIVE OUR COAL A BATH to improve our steel!"

"I'm Dick Jimenez, Preparation Engineer at Inland's new coal preparation plant in Price, Kentucky. Our job here is to provide a clean, uniform grade of coal with a low ash content for the Inland coke ovens. Poor coal...coal with varying degrees of slate mixed in... results in inefficient and undependable blast furnace operation. And today it's more important than ever that those blast

furnaces be as productive as possible."

This coal preparation plant was recently put into operation as part of Inland's continuing program of modernization and expansion. This constant improvement of every phase of steel-making is further evidence that Midwest steel users can put their confidence in Inland as a progressive and dependable source of steel in peace and war.



Products: Sheets, Strips, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories, Coal Chemicals.

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York • St. Louis • St. Paul

STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO.
2165 SCRANTON ROAD • • • CLEVELAND 13, OHIO



"SHINYHEADS"

America's Best Looking Cap Screw
Made of high carbon steel — AISI C-1038—to standards for Full Finished hexagon head cap screws—bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.



"HI-CARBS"

Heat Treated Black Satin Finish
Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.



FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots—less burrs. Flat and chamfered machined point. Carried in stock.



"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

CONNECTING ROD BOLTS
Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.



FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert—steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.
Tapped 1/4" to 3/4" inclusive.
Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

"LO-CARBS"

Made of AISI C-1018 steel—bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size—not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.



ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications—hexagon head hard; polished if specified — threads soft to close tolerance—points machine turned; flat and chamfered.

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.



STANDARDS

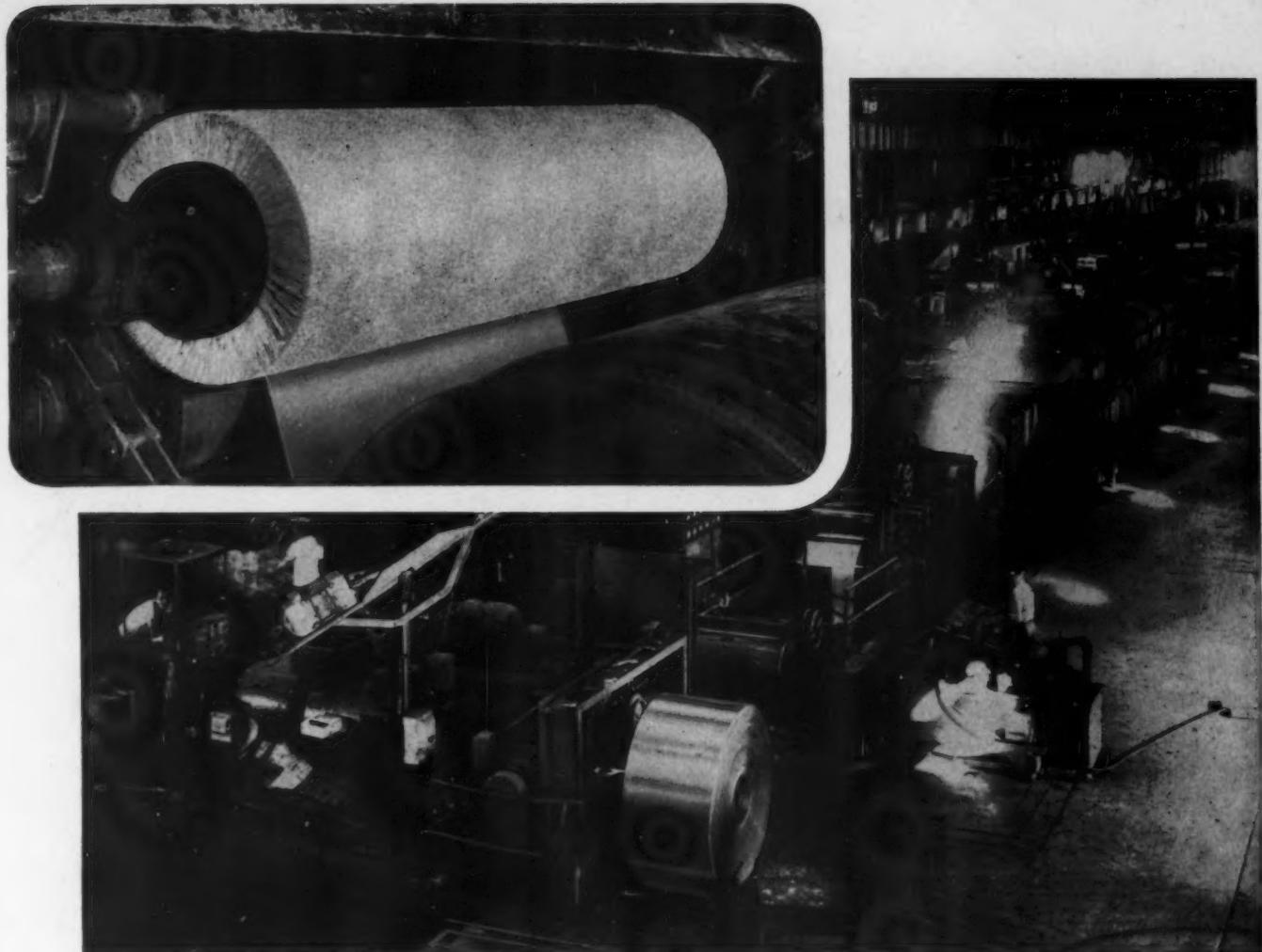
carried by
**LEADING
DISTRIBUTORS**

*
SPECIALS
furnished to
**BLUE PRINT
SPECIFICATIONS**

**WRITE FOR
INFORMATION**

SEND FOR SAMPLES

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907



Strip comes clean at *1500 feet per minute* with OSBORN power driven brushes

ON the continuous scrubbing operation above, Osborn Power Brushes are removing all traces of rolling oil from steel strip at a rate of over *1500 feet per minute*. Since a micro-thin coating of tin is later added by electroplating, any foreign matter remaining creates costly scrap and ties up plant operations. Six Osborn Heli-Master* Brushes here provide dependable around-the-clock performance despite the presence of hot caustic solvents.

Whether you have a continuous metal cleaning, sheet scrubbing, scale removing, bonderizing or conveyor cleaning problem, it is likely that an

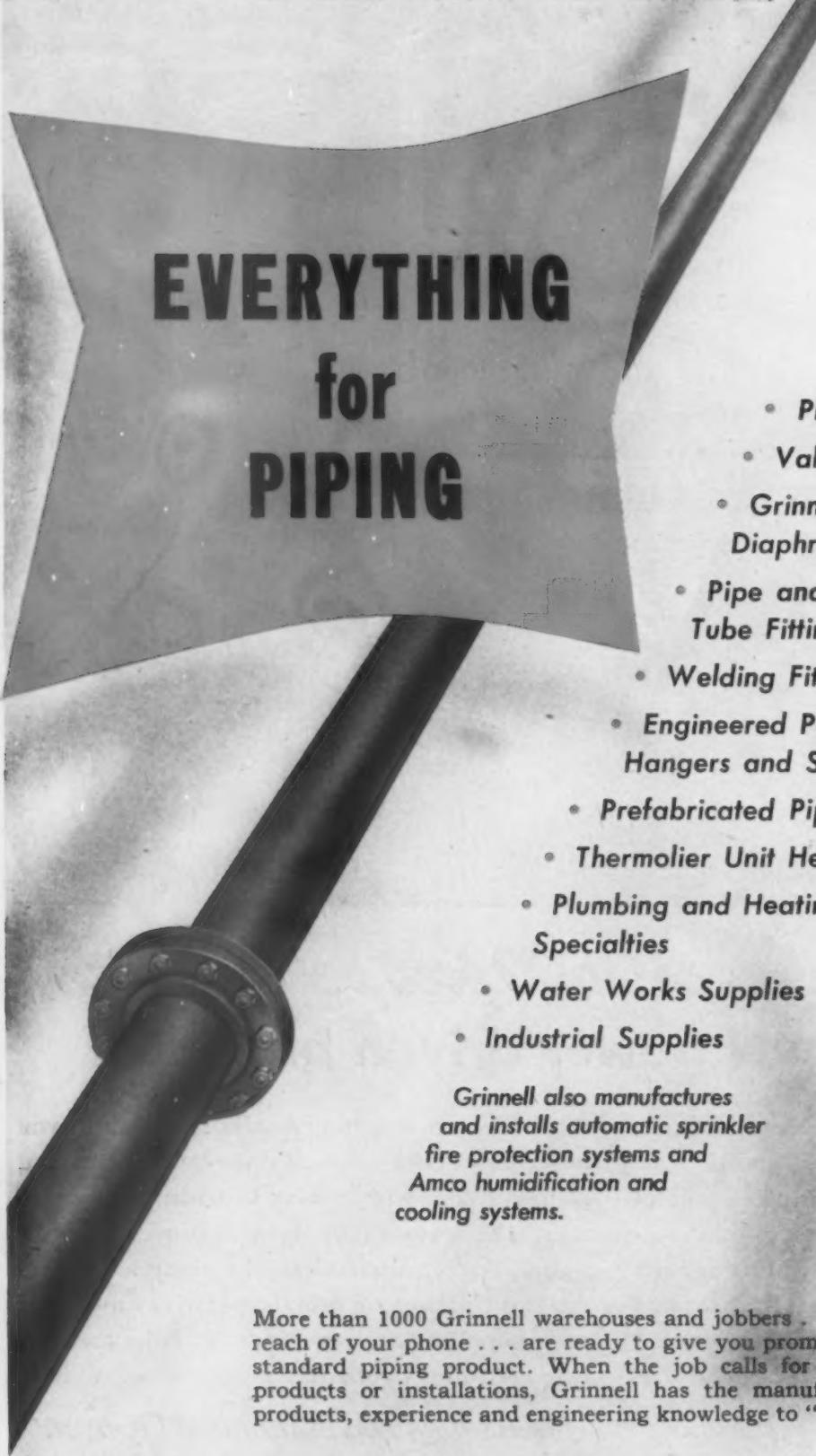
OBA (Osborn Brushing Analysis) will show you how this work can now be done easier, faster and at lower cost with power brushing. Likewise there are many other new, improved Osborn techniques for mechanically brushing a wide variety of finishes on metals, plastics and other materials. Why not request an **OBA** be made of your finishing operations now. Call or write—

THE OSBORN MANUFACTURING COMPANY

Dept. 366, 5401 Hamilton Avenue • Cleveland 14, Ohio
*Trademark



WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY • POWER DRIVEN BRUSHES • PAINT BRUSHES • MAINTENANCE BRUSHES



EVERYTHING for PIPING

- Pipe
- Valves
- Grinnell-Saunders
Diaphragm Valves
- Pipe and
Tube Fittings
- Welding Fittings
- Engineered Pipe
Hangers and Supports
- Prefabricated Piping
- Thermolier Unit Heaters
- Plumbing and Heating
Specialties
- Water Works Supplies
- Industrial Supplies

Grinnell also manufactures
and installs automatic sprinkler
fire protection systems and
Amco humidification and
cooling systems.



at your nearby
GRINNELL
WAREHOUSE
or **JOBBER**

More than 1000 Grinnell warehouses and jobbers . . . one within easy reach of your phone . . . are ready to give you prompt delivery on any standard piping product. When the job calls for specialized piping products or installations, Grinnell has the manufacturing facilities, products, experience and engineering knowledge to "deliver the goods."

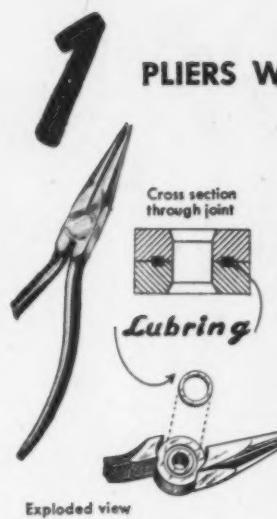


GRINNELL

Grinnell Company, Inc., Providence, R.I. Branches: Atlanta • Billings • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

NEWS FROM UTICA

Pioneering and improvements it will pay you to know about



1 PLIERS WITH BUILT-IN LUBRICATION ..

The finest pliers—the LUBRING line—have a ring of oil-impregnated porous iron floating in the joint. The ring slowly feeds lubrication and assures smooth action, long life. Standard equipment for several top utilities.

2 NEW SAFETY AND COMFORT IN SPECIAL HANDLES

Heavy rubber vulcanized handles for insulation—slip-on plastic handles that are non-burning, non-explosive—dipped plastic handles for comfort—handle springs for ease in use. For almost all UTICA tools.



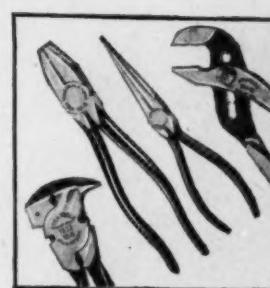
3 WRENCHES THAT LAST TEN TIMES AS LONG ..



Adjustable wrenches with electronically hardened jaw surfaces. Resist burring and nicking. Last up to 10 times as long. Their thin pattern was designed to reach the hard-to-get-at places—with plenty of strength!

4 80 TOOLS . . 151 SIZES. THE RIGHT TOOL FOR YOUR NEED

You get exactly what you want from UTICA! A full line of pliers and adjustable wrenches. Every tool checked in every step of manufacture, and tested. For long-run economy in your production line.



Utica Drop Forge & Tool Corporation, Utica 4, N. Y.

BETTER PLIERS FOR EVERY PURPOSE

It pays to use



quality tools

AND THE WORLD'S BEST TOOLS ARE MADE IN U. S. A.

Steel Makers • Forgesmiths • Heat Treaters • Machinists • Testing Equipment & Machinery Manufacturers

STEEL FORGINGS

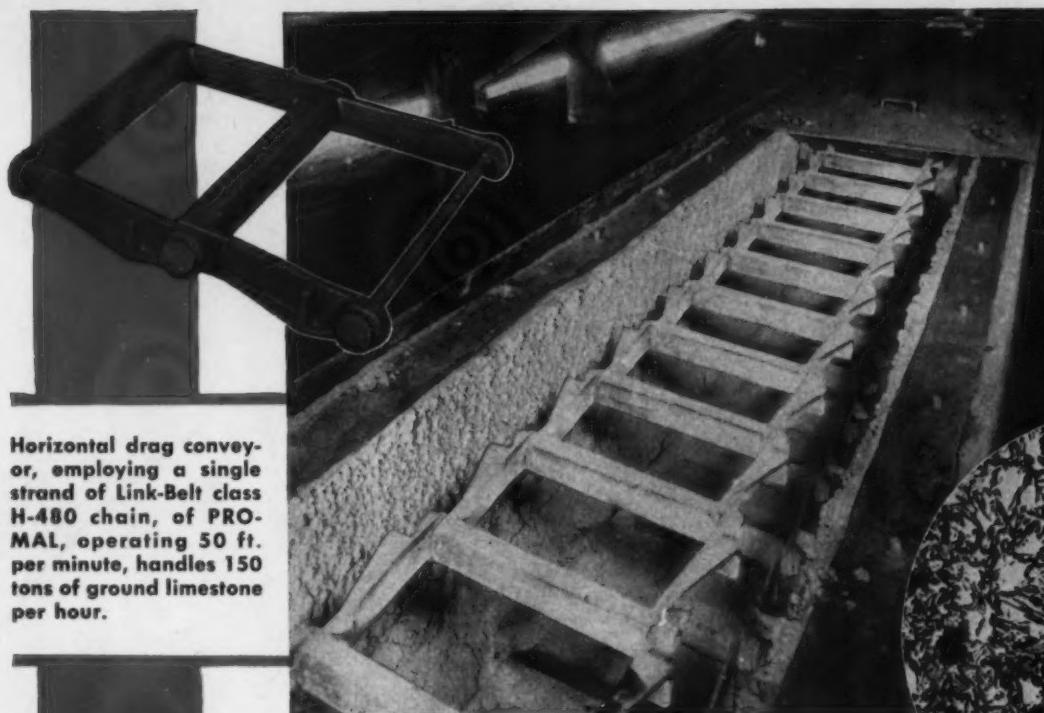
(FLAT DIE)

For Industry



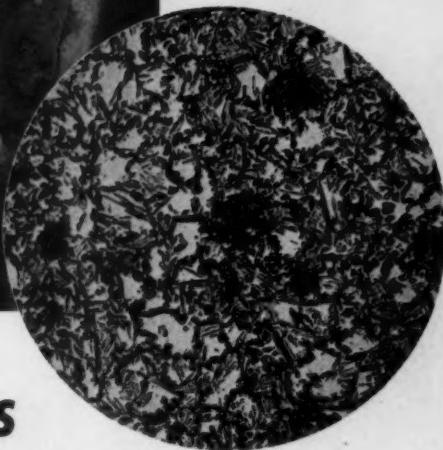
NATIONAL FORGE AND ORDNANCE
COMPANY

IRVINE, WARREN COUNTY, PENNSYLVANIA



Horizontal drag conveyor, employing a single strand of Link-Belt class H-480 chain, of PROMAL, operating 50 ft. per minute, handles 150 tons of ground limestone per hour.

The photo-micrograph below (100 times actual size), clearly shows the tough network structure which gives PROMAL its great strength and resistance to wear.



IT'S WEAR THAT MAKES THE MONEY GO

LINK-BELT PROMAL CHAINS Resist Wear Longer

Class C combination chain is available with cast center links of PROMAL, and side bars of high carbon steel.

Class GL and MR roller chains, with cast or steel rollers, are primarily used for conveyors or inclined elevators where load is carried directly by the chain and where reduced chain pull is desirable.

Class 800 Ley bushed chain, of PROMAL for heavy duty service in presence of abrasive material.

Style AA bucket of PROMAL, with heavy reinforced front edge and corners which increase the life of the bucket in handling abrasive materials.

Link-Belt "Flint-Rim" cast sprockets resist abrasion and outlast grey iron several times. Cast steel sprockets are also furnished where service is extra severe.

Strength, toughness and resistance to abrasion are characteristics of PROMAL, the stronger, longer wearing metal, that make it especially useful in chains and buckets. Where severe service conditions are to be met, PROMAL is the preferred metal. It may be repeatedly heated and cooled without damage or growth and may therefore be used in moderately high temperature applications.

PROMAL, an original Link-Belt development, has a uniform structure throughout its cross section, and its resistance to wear and abrasion continues after the surface is worn off. This resistance to wear is due to its own peculiar structure, and not to its Brinell hardness.

12,074

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5,
San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Johannesburg.
Offices, Factory Branch Stores and Distributors in Principal Cities.



LINK-BELT

Chains and Sprockets

Want Additional Product Information? See Page 19.

DECEMBER, 1950

11

A complete line—
DISSTON BITE-RITE FILES
from a single good source—
YOUR LOCAL DISSTON
INDUSTRIAL DISTRIBUTOR



DISSTON®

...TOOL-MAKER'S TOOL MAKER

Thousands of dozens of files are used annually right in Disston plants, in the regular production of other fine Disston Tools. You could have no stronger proof that Disston Bite-Rite® Files are able to do the toughest kind of high-precision work, within rigid cost limits. *That's what Disston makes them for!*

Others in all lines of industry are likewise guarding quality, speeding schedules, and economizing, by using Disston Bite-Rite Files. *Disston Skill* makes each shape and cut precisely uniform. And *Disston Service* is ready to help you get every last penny's worth of good work out of Disston Files . . . and out of any other Disston Tools you buy.



For there is a qualified Disstioneer available to analyze operations for you, and consult with you on applying all Disston Tools most efficiently on any of your work. *Call for a Disstioneer to help you lick the jobs that lick the average tools!*



DISSTON METAL-CUTTING BAND SAWS
You can get the correct types from the
Disston line—Hardened Throughheat
and Hard Edge Flexible Back (In Regular
and Buttress Tooth patterns).



DISSTON HACK SAW BLADES
For a wide variety of machine and
hand metal cutting operations.
IN THESE TYPES: High Speed DI-MET
Chrome® DuraFlex® *Reg. U.S. Pat. Off.

HENRY DISSTON & SONS, INC.

1233 Tacony, Philadelphia 35, Pa., U. S. A.

In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.



PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

December 1, 1950.

HEAVY DRAIN ON STEEL SUPPLY

While military requirements for materials will become significant in the second quarter of the coming year, the biggest drain on available materials will come from the so-called defense supporting industries.

The freight car building program—proposing the building of 10,000 new freight cars a month—will take more steel at the outset of the defense program than will direct military.

This is even more true of the petroleum industry expansion program.

NON-DEFENSE USAGE OF SCARCE MATERIALS CURTAILED

These conditions basically will determine Government policy as to restrictions on the processing of scarce materials by non-defense industry.

Where a direct military requirement must be met, the Government will take stringent and arbitrary action to halt civilian industrial usage.

Example is the action taken by the National Production Authority reserving the entire production of columbium-bearing stainless steels for defense.

However, where the requirement stems from defense supporting industry, arbitrary restrictions aimed at so-called non-essential industry are not likely. NPA is seeking to avoid selective action against specific industries.

NPA now holds to the view that the Government should not hold the toy industry less essential than household appliances or automotive.

STOCKPILING AGGRAVATES SUPPLY PROBLEMS

One of the most troublesome of the defense preparation activities is the accumulation of the strategic materials stockpile. Building up of the stockpile proceeded at a slow rate during the postwar years.

Current acceleration in purchase of stockpile materials comes at an unfortunate time, in that accumulation now further accentuates the shortages.

The stockpiling program not only drains off materials that would otherwise be available for civilian processing, but halting the processing at a primary stage idles plant capacity available for further processing. Example is the short week worked by brass wire mills due to the lack of copper.

MILITARY SEEKING GREATER PLANNING IN PROCUREMENT

Military top command is making a real effort to organize procurement so that it will have the least impact on the normal economy.

From historical experience, military procurement does not proceed in a rational manner. A military procurement officer does not, under emergency conditions, try to place his orders in such a way as to minimize impact on suppliers. Nor does the military procurement officer shop around to discover the terms and conditions of other competitive suppliers, as is the case in private business where financial costs are limited by profit considerations.

A new factor has been introduced which has forced military leaders to think in terms of costs. The inflationary trend has been so marked that the higher prices have eaten substantially into the volume of military goods that can be bought with the money appropriated by Congress.

This has made the military more cost-conscious, and efforts are now being made to rationalize military procurements as to timing, delivery dates, selectivity among available suppliers, and reasonableness of specifications.

**doing this
costs more
now!**

**You do it less often
by using Dependable Quality
CRANE VALVES**

*That's why
more Crane Valves
are used
than any other make*

...this valve likes tough throttling jobs

—And for durable, maintenance-free service, it's typical Crane quality. The plug-type disc and seat construction in Crane No. 14½P's utilizes the toughest combination of metals found in 150-Pound brass valves. Extra wide seating surfaces give high resistance to damage by "wire drawing" or foreign matter. Crane disc taper is precisely correct for accurate flow regulation.

Whether you need throttling valves or any other type, you'll pay less in the long run by insisting on Crane Quality. Get a demonstration by your Crane Representative.

CRANE

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

CRANE CO., General Offices:
836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

▲ PURCHASING PREVIEWS

continued

SOME OF THE PROBLEMS IN SUPPLY-ING THE MILITARY

Manufacturers seeking military contracts have complained of the difficulty of competing against producers who have been regular suppliers to the military establishment.

While contracts may specify a particular product or its "equal" in quality or performance, many military products are the result of development—the regular supplier having worked closely with the military in producing the items.

Trend has been for manufacturers to seek the most convenient type of defense contract—production of an item identical to, or closely allied with their civilian product.

There has been considerable competition for contracts on such items, with a tendency to lay off highly specialized items that might entail a short production run, and highly specialized equipment.

PUBLIC PURCHASING POWER GREATLY INCREASED

Rising industrial wage rates have added considerably to public purchasing power, but significantly a Department of Commerce analysis of trends in employee compensation indicates that roughly two-thirds of the \$19 billion advance in total personal income, at an annual rate, from August 1949 to August 1950 resulted from the expansion in non-farm private payrolls.

During 1950, wage and salary payments in private non-agricultural industries increased rapidly, reaching a high in August of \$122.4 billion at annual rates, compared with \$110.1 billion in the same month of 1949.

During the 12-month period ending in August 1950, \$5.1 billion, or about 40%, of the increase in private non-farm employee income was attributable to greater employment, while \$2.4 billion of the increase, or 20%, resulted from lengthening of hours worked. Advances in basic wage rates accounted for the bulk of the remaining \$4.8 billion, with the shift in employment to higher paying industries, job upgrading, and related factors of lesser significance.

The greater importance of increases in employment and longer hours is in contrast with earlier periods of advancing income in the postwar years, when change in wage rates was the dominant influence.

INVENTORY TRENDS ARE VARIED

Government analysis of industrial inventory trends shows some increase in inventory levels in terms of dollar value, traceable to price increases.

There is also some recent indication of a physical increase in inventory of purchased materials and goods in process. This increase seems to be largely the result of military contract holders building up to fill defense orders.

Levels of wholesale and retail sales have been so high that inventories at the distribution level have been held down. Similarly, while the volume of business has been large enough to justify a further buildup of materials and work-in-process inventories, the shortages in metals and materials of all kinds has tended to keep manufacturers' inventories from building up in any substantial measure.

HIGHER WAGES TO MEAN STILL HIGHER PRICES

is possible.

The pattern of the last five years is in the process of repetition, with major industrial unions establishing a pattern for wage adjustment, and with this pattern working its way into practically all industrial wages.

This process is continuing despite the fairly universal understanding that the higher wage levels will be translated into higher prices.

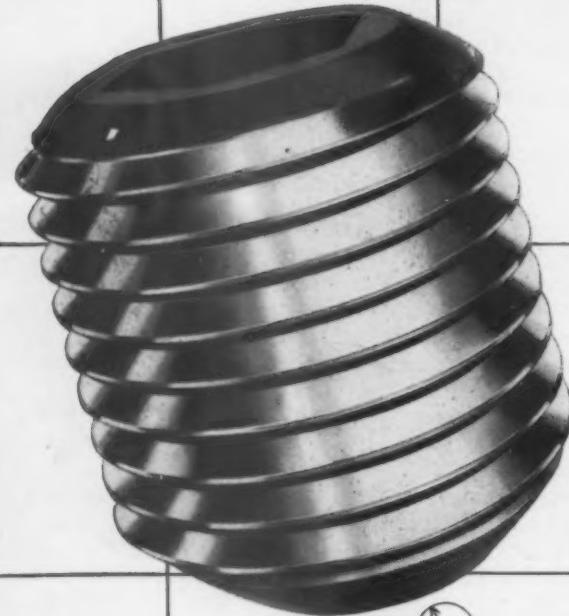
Union leaders are pointing to the record earnings reported by industry as in an indication that there is room in most profit margins for a substantial wage increase without reflecting in still higher prices.

The fact that these contenders tend to overlook is that the 1950 profit levels were attained primarily because of a record volume of production—and that unit production costs have been very high. In a period of partial mobilization and civilian industry cutbacks, profit margins will be scaled down sharply.

At the outset of World War II, principal deterrent to effective price stabilization was lack of control over farm prices. Currently, the issue of price stabilization is largely submerged by the determined effort on the part of union leaders to push wage levels up higher before any stabilization action

Parker-Kalon GROUND THREAD Socket Set Screws

Give every department A LIFT



DESIGN

Ground Thread smoothness and accuracy plus faultless thread contour and lead make P-K Socket Set Screws first choice for a high quality product.



ASSEMBLY

Free from nicks, burrs and tool marks, P-K Ground Thread Socket Set Screws are consistently uniform and are made to close tolerances. Therefore they start easy, drive easy — keep assembly humming.



INSPECTION

With a dependable Class 3 Fit, every P-K Socket Set Screw is made of high-grade alloy steel, heat-treated to withstand severe torque and compression loads.



SEND FOR FREE SAMPLES

See and feel for yourself the difference thread grinding makes. Try them once, and see why so many Socket Set Screw users are switching to P-K. Parker-Kalon Corporation, 200 Varick St., New York 14, New York.

*TRADE MARKS REG. U.S. PAT. OFF.

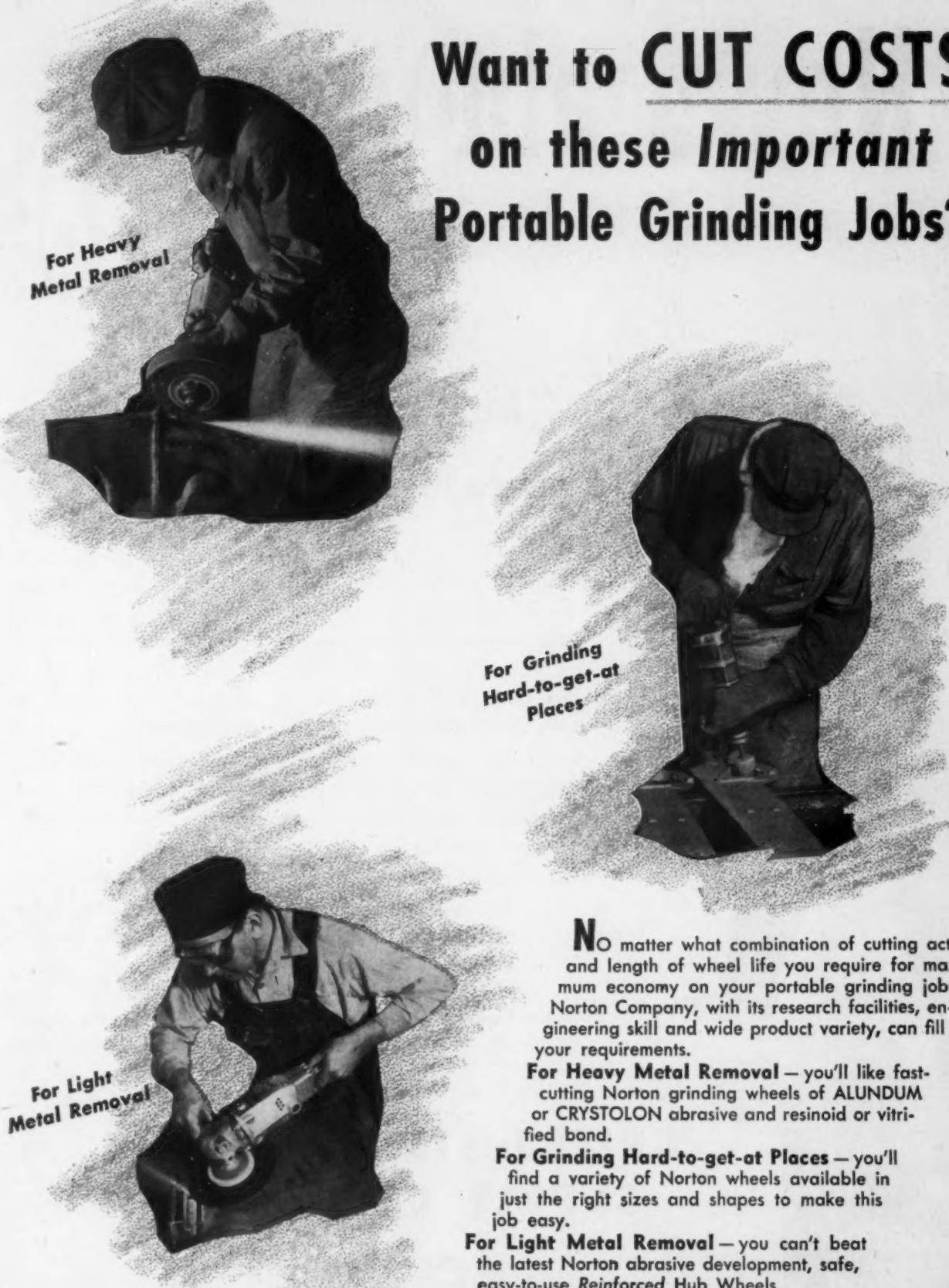


Ground Threads, heretofore available only in precision equipment, provide an extra sales feature any shrewd buyer appreciates.



PARKER-KALON*
cold-forged
SOCKET SCREWS





Want to CUT COSTS on these Important Portable Grinding Jobs?

For Heavy
Metal Removal

For Grinding
Hard-to-get-at
Places

For Light
Metal Removal

No matter what combination of cutting action and length of wheel life you require for maximum economy on your portable grinding jobs, Norton Company, with its research facilities, engineering skill and wide product variety, can fill your requirements.

For Heavy Metal Removal — you'll like fast-cutting Norton grinding wheels of ALUNDUM or CRYSTOLON abrasive and resinoid or vitrified bond.

For Grinding Hard-to-get-at Places — you'll find a variety of Norton wheels available in just the right sizes and shapes to make this job easy.

For Light Metal Removal — you can't beat the latest Norton abrasive development, safe, easy-to-use Reinforced Hub Wheels.

NORTON COMPANY • WORCESTER 6, MASS.

Distributors In All Principal Cities

W-1327

NORTON

ABRASIVES

Making better products to make other products better

News about steel

FROM U·S STEEL SUPPLY



What effect will "Mobilization Economy" have on steel supplies?

● Our economy is now entering an extended period unlike any other in our history. During this period, industrial efforts will be divided between building an adequate defense machine and maintaining our high standard of living. Industries working on government defense orders will have "DO" priority ratings and get first call on critical steels. Steel distributors will replenish their inventories by passing these defense orders along to steel producers.

Under these circumstances, if you do not have a "DO" priority rating you may have difficulty obtaining certain steel items essential to defense. Substitute steels can frequently be employed, but you may need help in locating suitable material.

Here's how to get the help you need: Call in a United States Steel Supply Company representative. He will do his best to locate the type of steel your work requires. That's his job . . . to give the best service possible, whatever the circumstances.

Principal Products: Carbon, Alloy and Stainless Quality Steels
Aluminum • Reinforcing Bars • Tools • Supplies and Machinery

WHEN YOU DEAL
WITH US, YOU GET
**Service
Plus!**

**UNITED STATES STEEL
SUPPLY COMPANY**



Warehouses and Sales Offices: BALTIMORE • BOSTON • CHICAGO
CLEVELAND • LOS ANGELES • MILWAUKEE • MOLINE, ILL. • NEWARK • PITTSBURGH
PORTLAND, ORE. • SAN FRANCISCO • SEATTLE • ST. LOUIS • TWIN CITY (ST. PAUL)
Sales Offices: INDIANAPOLIS • KANSAS CITY, MO. • PHILADELPHIA • ROCKFORD, ILL. • TOLEDO
TULSA • YOUNGSTOWN

Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

UNITED STATES STEEL

—Modernize—

YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24, and 166! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 166. Also we will be glad to obtain information for you on any product advertised in this issue. See instructions below.

When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.

1. **CHEMICAL CONSTRUCTION** Materials—General bulletin MCC No. 1 describes line of chemical construction materials—corrosion-proof linings and cements, acid-proof brick and tile, corrosion-proof brick sheathing, protective coatings and floors. Atlas Mineral Products Co., 42 Walnut St., Mertztown, Pa.

2. **CUTTING TOOLS** — Catalog illustrates and gives details of cutting tools-midget mills, junior mills, lab mills, tube deburrers, countersinks, reamers, electrode dressers, hand files, etc. Severance Tool Industries, Inc., 672 Iowa Ave., Saginaw, Mich.

3. **LUBRICATION**—"11 Ways to Cut Production Costs" is title of informative booklet, which tells about savings in production time and maintenance and in lubricant, through efficient handling of petroleum products. Alemite, Dept. U-100, 1850 Diversey Parkway, Chicago 14, Ill.

4. **VENTILATION** — Two Bulletins, No. 572A-Air Circulators, and No. 572B-Exhaust Fans, contain practical information on ventilation for plants, offices and institutions. Emerson Electric Mfg. Co., St. Louis 21, Mo.

5. **FLOOR WAXING**—Folder tells how Super-Swiftsheen cuts costs by lasting 2 to 3 times as long, and saves from 1/2 to 2/3 of the cost of waxing labor. The Gerson - Stewart Corp., Lisbon Road, Cleveland, Ohio.

6. **SPRINGS** — New Revised Handbook of Technical Data on Springs is now available from the Accurate Spring Mfg. Co., 3825 W. Lake St., Chicago 24, Ill.

7. **RIVETS** — Price list, tubular and split rivets available in all metals for all industrial needs, is now available from American Rivet Co., 849 N. Kedzie Ave., Chicago, Ill.

8. **S. S. FASTENINGS**—Folder 50R gives full information about the more than 7,000 varieties and sizes of stainless steel fastenings carried in stock by Anti-Corrosive Metal Products Co., Inc., Castleton-on-Hudson, New York.

9. **WASHERS**—Folder details specifications for Armed Forces washers, flat and lock. George K. Garrett Co., Inc., Philadelphia 34, Pa.

10. **INDUSTRIAL TAPES** — "A New Tool For Industry" is title of 12-page booklet which tells how Permacel industrial tapes, pave the way for lower costs in wide range of manufacturing and shipping operations. Industrial Tape Corp., New Brunswick, N. J.

11. **GUMMED TAPE**—Samples of Red Streak gummed tape are available for the asking. It reinforces as it seals and resists rough handling. The Brown-Bridge Mills, Inc., Box P-5010, Troy, Ohio.

12. **ELECTRIC DRILLS** — Portable electric drill line, giving choice of 25 models in all, from 1/4" to 1-1/4" capacity, is described in catalog available from The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Md.

13. **CHAIN**—New Catalog has been issued by the Campbell Chain Co., York, Pa.

14. **MAGNETIC MOTOR** Starters—Bulletin GEA-5153, Section 730-11, tells all about G-E magnetic motor starter which is available from stock in NEMA sizes 0, 1, 2 and 3 for a-c motors up to 50 hp. Apparatus Dept., General Electric Co., Schenectady, N. Y.

(Please turn to page 20)

(Continued from page 19)

- 15. OIL CUPS** — Price Guide Catalog details the large selection of oil cups available to industry from Gits Bros. Co., 1865 Kilbourn Ave., Chicago, Ill.

- 16. RELAYS** — 24-page catalog details full line of relay and electro-mechanical assemblies, illustrating standard and special models—150 models for every electrical and electronic application. Potter & Brumfield, 233 No. Main St., Princeton, Indiana.

- 17. ELECTRIC MOTORS** — Protected-type motors are detailed in Bulletin S1-300-1A, available from Elliott Co., Crocker-Wheeler Divn., Jeannette, Pa.

- 18. NUTS-FASTENERS** — 92-page Catalog P describes full line of machine screws, stove bolts, wood screws, etc. Atlas Screw & Specialty, 450 Broome St., New York, N. Y.

- 19. PLYWOOD** — 20-page Booklet "A New Dimension" tells about GPX plastic-faced plywood which has an armor-hard, satin-smooth finish, and opens the way for cutting costs. Georgia-Pacific Plywood & Lumber Co., 1233 Southern Finance Building, Augusta, Ga.

- 20. BEARING BALLS** — Bearing balls, burnishing materials and barrel finishing equipment are subject of illustrated catalog—manual issued by The Abbott Ball Co., Hartford, Conn.

- 21. PUMPS** — Service exchange plan. GS pumps, built in 3 sizes from 2½" to 4" for capacities to 400 gpm and heads to 230' are subject of bulletin 1001. Pump is designed to fit the idea of a Service and Exchange plan. All parts except pump casing are contained in easily replaceable rotor assembly. In maintenance, old rotor assembly is removed, and new one dropped in place, old one being returned for credit on serviceable parts. De Laval Steam Turbine Co., Trenton 2, N. J.

- 22. SERVICE SHOPS** — Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland 10, Ohio, has just released Bulletin A-2025, listing the company's 83 authorized service shops with telephone number and name of man in charge.

LATEST TRADE LITERATURE

(This is Page 20)

Check Over All Five Pages! 19, 20, 22, 24 and 166

Write manufacturers direct, (mentioning PURCHASING Magazine please); Or, let us have a short letter on your Company letterhead listing numbers of items you want and month of issue.

This service also applies to numbered news items in New Products Section, Pages 128-162.

Reader Service Department
PURCHASING Magazine
205 E. 42nd St., New York 17, N. Y.

- 23. ONE COAT-MULTICOLOR** — Plextone multicolor industrial finish and multicolor enamel which make it possible to spray a product with two or more colors simultaneously in a single spray coat are detailed in technical sheets just released by Maas & Waldstein Co., 1658 Carroll Ave., Chicago 12, Ill.

- 24. PACKINGS, GASKETS** — Packings and gasketing materials made of Teflon which is chemically inert to all materials except molten alkali metals, and which are suitable for use at operating temperatures ranging from below -90 deg. F. to 500 deg. F., are subject of new bulletin just released by The Garlock Packing Co., Palmyra, N. Y.

- 25. NEW FASTENER** — Keps, pre-assembled nut and lock-washer, which make it possible to lock nuts without separate lock-washer handling operations, are subject of bulletins issued by Shaperoof, Inc., Division of Ill. Tool Works, 2501 No. Keeler Ave., Chicago 39, Ill.

- 26. GLASS-HARD COATING** — Bulletin describes Phenoline, glass-hard, corrosion resisting, brush-on coating that hardens at room temperature. It is impervious to practically all solvents and to all inorganic and organic acids except strong oxidizing solutions. Available in colors. Provides tile-like surface. Carbofine Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

- 27. SODA ASH** — 64-page illustrated manual "Soda Ash" is characterized as most complete handbook on the subject ever

published. It gives information on manufacture, uses, forms and grades, unloading and handling, etc., and contains technical data section. Pittsburgh Plate Glass Co., Columbia Chemical Divn., Fifth Ave. at Bellefield, Pittsburgh 13, Pa.

- 28. DRY TRANSFORMERS** — New 23-page booklet, B-4428, on Dry Type transformers explains why they are safer and less expensive to install and maintain. Types of air-cooled transformers for every use are illustrated — interoffice communication systems to 10,000 kva power centers. Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

- 29. TRANSMISSION** — Bulletin describes Zero-Max infinitely variable speed transmission, giving information on models with torque ratings up to 120 lbs. A table gives recommendations as to type torque converter to be used with motors of a particular speed and horsepower. Revco Inc., Dept. P. 407 Thorpe Bldg., Minneapolis, Minn.

- 30. GRINDING WHEELS** — Catalog bulletin details wheels for tool and cutter grinding, horizontal surface grinding and carbide tool grinding. Also lists popular sizes and shapes of wheels for this class of grinding. Simonds Abrasive Co., Tacony & Fraley Sts., Philadelphia 37, Pa.

- 31. HYDRAULIC OILS** — 44-page technical bulletin B-4 gives information on hydraulic systems, maintenance, trouble-shooting and selection of proper fluids. Contains cut-away drawings of basic types of valves, pumps, hydraulic motors, torque converters, etc. It is practical training aid for maintenance men and others. Copies available for this purpose. Sun Oil Co., Philadelphia 3, Pa.

- 32. FLAMATIC HARDENING** — 20-page catalog describes No. 2 Flamatic Hardening Machine for hardening parts in production quantities to metallurgical standards and dimensional tolerances. 12 application case histories cited. The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

- 33. ANTI-CORROSION METALS** — Materials Selection chart is designed to aid in the selection of the most economical material
(Please turn to page 22)



Ten thousand teeth *and every one a working tooth!*

A FILE with a lot of its teeth shorter than their neighbors is about as efficient as a farmer's harrow with some of its spikes missing, a pitchfork minus a tine, or a chair with a broken leg. . . . It just can't do a good job, can't do as much work, can't give you your money's worth.

Since there is no "give" in a metal surface, short teeth in a file are almost totally useless. Chances are they're not sharp even after the higher ones have worn down to their level.

Uniform height and sharpness of file teeth are largely a matter of file-cutting precision — an important manufacturing detail in which Nicholson file-cutting machines are considered tops. Squint your eye along the working surface of a Nicholson or Black Diamond file and note how completely Accuracy is in the saddle.

And what you can't see, but still is there, too, are the toughness and uniform hardness of those teeth. If proof is wanted on that score, a patient count of the number of efficient filing strokes in a Nicholson or Black Diamond file will bring you the answer.

EXTRA-QUALITY "GRADE A" is the banner under which these world-famous files come to you through your industrial distributor.

FREE BOOK, "FILE FILOSOPHY"— 48 interesting, informative illustrated pages on the manufacture, kinds, use and care of files. Available to executive, purchasing and production heads, shop foremen, key mechanics. Send for it.



NICHOLSON FILE CO., 28 ACORN ST., PROVIDENCE 1, RHODE ISLAND

(In Canada, Port Hope, Ont.)



NICHOLSON

A FILE FOR EVERY PURPOSE

(Continued from page 20)

satisfactory for resistance to corrosive media. Lists 350 corrosive conditions, and most economical metal to be used therefor. The Cooper Alloy Foundry Co., Hillside 5, N. J.

□ 34. STOP WATCHES — Stop watches are illustrated and described in bulletin issued by Meylan Stopwatch Co., 264 W. 40th St., New York 18, N. Y.

□ 35. FLAME HARDENING — New flame hardening apparatus catalog provides descriptions and illustrations of the latest flame hardening equipment. Gas control equipment and pipe line systems are discussed. Air Reduction Sales Co., 60 E. 42nd St., New York, N. Y.

□ 36. POWER BRUSHES — Booklet describes new line of Helimaster power brushes for cleaning, scrubbing prior to plating, bonderizing, tin plating, hot dip galvanizing, etc. Complete instructions for ordering and specifications for use are included. The Osborn Manufacturing Co., 5401 Hamilton Ave., Cleveland, Ohio.

□ 37. DRIVE COUPLINGS — Water-cooled couplings for adjustable speed drives are detailed in 16 page booklet which illustrates typical applications. Dynamic Corp., Kenosha, Wis.

□ 38. MIXERS — Catalog 500 gives operation and performance data on portable mixers, and Catalog 600 gives complete data on top and side entering fixed-mounting mixers. Mixers handle all varieties of mixing problems. Eastern Industries, 296 Elm St., New Haven 6, Conn.

□ 39. LABORATORY APPLIANCES — Castaloy laboratory appliances — holders, clamps, supports, etc., are illustrated and described in new bulletin. Burrell Corporation, 2223 Fifth Ave., Pittsburgh 19, Pa.

□ 40. REGULATORS — Folder illustrates and describes temperature regulators, pressure regulators and desuperheaters, and explains principles of pilot operated regulating valves. Spence Engineering Co., Inc., Walden, N. Y.

□ 41. FANS, BLOWERS — Catalog #5001 details Class 2000 pressure blowers, giving engineering data,

LATEST TRADE LITERATURE

(This is Page 22)

Check Over All Five Pages!
19, 20, 22, 24 and 166

Write manufacturers direct, (mentioning PURCHASING Magazine, please); Or, let us have a short letter on your Company letterhead listing numbers of items you want and month of issue.

This service also applies to numbered news items in New Products Section, Pages 128-162.

Reader Service Department
PURCHASING Magazine
205 E. 42nd St., New York 17, N. Y.

blower inquiry sheets, dimension drawings, performance charts, motor data, accessories, etc. Diameters 3' to 8'; blades 2 to 8; volumes up to 100,000 cfm; static pressures up to 4" water gauge; Materials, Monel metal; available in stainless steel, nickel, etc. The Moore Co., Marceline, Mo.

□ 42. CHROMIUM PLATING — The Cro-Plater and the Cro-Hone, the latter a compact wet-blaster, and CroPlating, a method of electrolytically depositing chromium on working metal surfaces, are the subject of printed matter available from The Cro-Plate Co., Inc., Hartford 5, Conn.

□ 43. INCINERATORS — Brule portable incinerators — the Trash Burner, Standard Brule Portable, Garbage Hog, and gas fired incinerator for garbage and rubbish disposal are detailed in literature available from the Goder Incinerator Corp., 407 So. Dearborn St., Chicago 5, Ill.

□ 44. ADHESIVES, COATINGS, SEALERS — Properties of over 100 industrial adhesives, coatings and sealers are tabulated in 32 page booklet "3M Adhesives, Coatings and Sealers." Tables of properties cover 64 adhesives for bonding metal, rubber, glass, fabrics, wood etc. to themselves and other materials, 18 sealers such as used in making auto bodies, wood decks, aircraft cabins, and 12 coatings for protecting metal against corrosion and abrasion. Strippable coatings are also described. Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn.

□ 45. PNEUMATIC TUBES — Pneumatic tube systems, installation of which have made for savings running into thousands of dollars, in the handling of small parts, orders, etc. are described in bulletin No. 11. Standard Conveyor Co., North St. Paul 9, Minn.

□ 46. MATERIALS HANDLING — Standardized gravity and power units — roller conveyors, wheel conveyors, portable belt conveyors, elevating and lowering conveyors are detailed in bulletin 63-A. Standard Conveyor Co., North St. Paul 9, Minn.

□ 47. MOTOR STARTERS — Type H Motor Starters, 2300 to 5000 volt squirrel cage, wound rotor, synchronous and multispeed motors are detailed in Bulletin 14B6410A; and Type 256 high voltage air break contactor, are subject of bulletin 14B7303. Allis-Chalmers Manufacturing Co., 923 So. 70th St., Milwaukee, Wis.

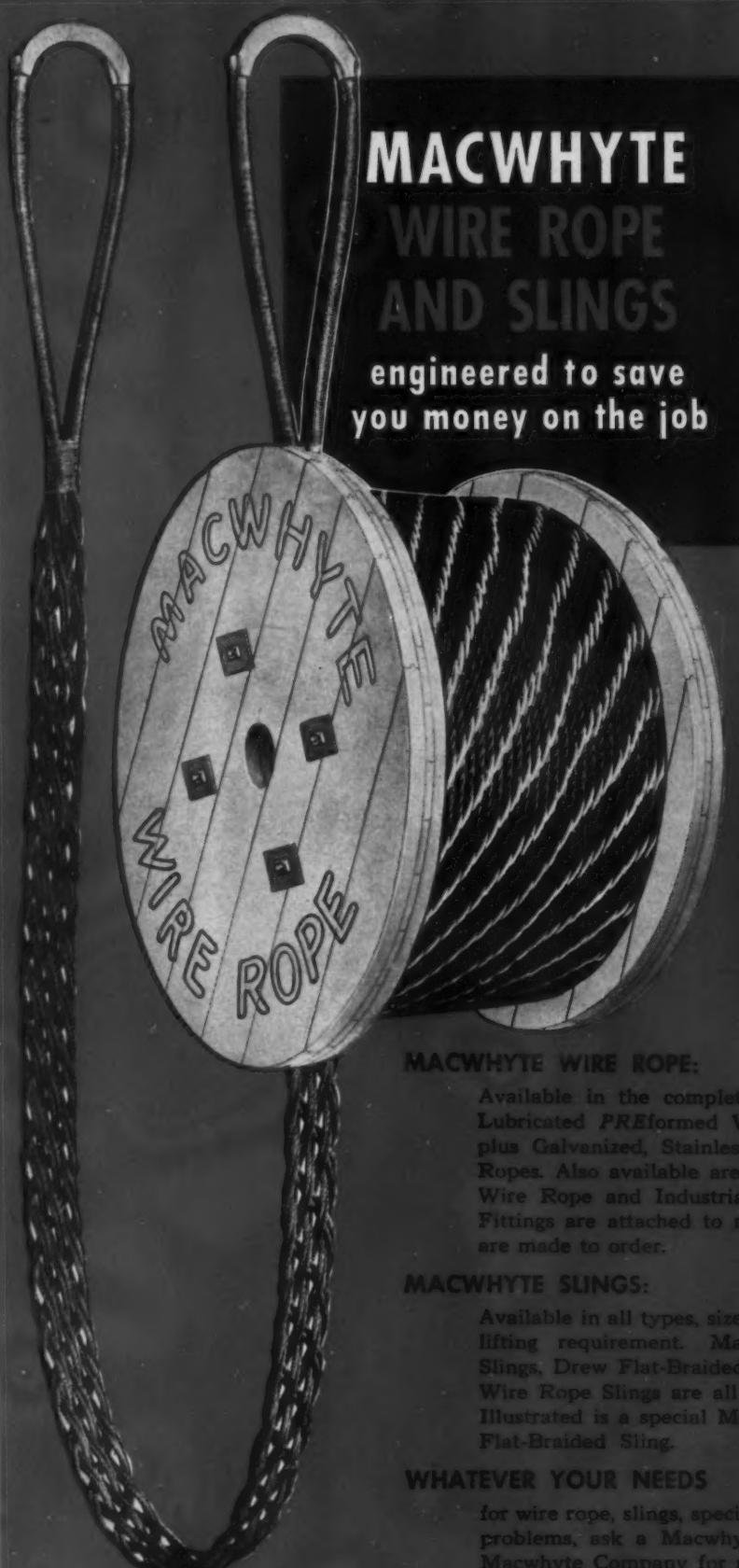
□ 48. PLATING MACHINES — New bulletin describes the entire line of Udylite Automatic Plating Machines — full automatics, single row, double row, overhead return type, rotary and other models. Udylite Corp., Detroit 11, Mich.

□ 49. MAGNETIC STARTERS, CONTACTORS — Folder covers new line of magnetic starters and contactors in sizes 0, 1, 2, 3 and 4. Known as the Type RA starters and CRA contactors, units meet need for reduced weight and size without sacrifice in performance. They are said to be smallest such controls on the market. Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.

□ 50. PLASTICS — "Simplified Guide to Bakelite and Vinylite Plastics and Resins" classifies the various forms of Bakelite phenolic, styrene, polyethylene and Vinylite plastics and resins under 14 headings, describes characteristics and properties, and shows typical applications in 126 illustrations. Bakelite Division, Union Carbide & Carbon Corp., 300 Madison Ave., New York 17, N. Y.

□ 51. NON-HIGHWAY TRUCKS, TRAILERS — New catalog No. 116 on complete line of industrial and commercial trucks includes all commonly used types of trucks from light tubular steel bottlers'

(Please turn to page 24)



MACWHYTE WIRE ROPE AND SLINGS

engineered to save
you money on the job

Ask Macwhyte to recommend the type and size of wire rope best suited for your needs. There are a thousand and one wire ropes made by Macwhyte.

Specifications for the correct sling for any lifting need are yours from Macwhyte for the asking.

Prevent loss!
Save time!
Be sure!

MACWHYTE WIRE ROPE:

Available in the complete Macwhyte line are Internally Lubricated PREformed Wire Ropes for all equipment—plus Galvanized, Stainless Steel, and Monel Metal Wire Ropes. Also available are special assemblies of Macwhyte Wire Rope and Industrial Standards "Safe-Lock" fittings. Fittings are attached to rope by swaging—and assemblies are made to order.

MACWHYTE SLINGS:

Available in all types, sizes and lengths, to meet almost any lifting requirement. Macwhyte ATLAS Round-Braided Slings, Drew Flat-Braided Slings and Monarch Single-Part Wire Rope Slings are all made to order to fit your needs. Illustrated is a special Macwhyte Drew 14-part Type 1CT Flat-Braided Sling.

WHATEVER YOUR NEEDS

for wire rope, slings, special assemblies, solutions for special problems, ask a Macwhyte distributor or write direct to Macwhyte Company for suggestions and recommendations.

MACWHYTE COMPANY, 2918 Fourteenth Avenue, Kenosha, Wisconsin. Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots throughout the U.S.A. and other countries carry stocks for immediate delivery. Catalog on request. Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles

BESTOW

(Continued from page 23)

trucks to heavy duty stevedore and freight terminal two wheel hand trucks, warehouse trucks, and custom designed trucks and trailers up to 50 tons capacity. Ninety-five models. Kilbourne & Jacobs Mfg. Co., Columbus 16, Ohio.

□ 52. CONTROL ACCESSORIES

New 42 page Data Book and Catalog gives application recommendations and pertinent information concerning instrument sensing units and associated accessories. Gives data on making, checking, selecting and ordering thermocouples; wire sizes and resistances, etc., and is practical handbook on applying indicating, controlling and recording instruments. Wheelco Instruments Co., 847 W. Harrison St., Chicago, Ill.

□ 53. SUBSTATION — Bulletin 11B7457 gives full details on single circuit unit substation, which may be completely installed within 24 hours after receipt of shipment. Allis-Chalmers, 923 So. 70th St., Milwaukee, Wis.

□ 54. TUBE EXPANDER — Bulletin describes new Roller Tube Expander, type FC, which features adjustable ball bearing thrust collar to reduce scoring and friction on tube end. It has been standardized for automatically controlled driving units, but is general purpose tool that can be driven by other means. A. L. Henderer's Sons, Maryland Ave. and Beech St., Wilmington, Del.

□ 55. ARC WELDING — Bulletin W-80 gives full details about new P&H WFA-300 DC arc welding machine. It features built-in remote control, low rpm per pound of weight, light weight, and cool operation. Harnischfeger Corp., Welding Divn., 4577 W. National Ave., Milwaukee 14, Wis.

□ 56. GEAR, WHEEL PULLERS — Catalog describes 12 types, 40 sizes, 2-arm, 3-arm, standard and special Steelgrip puller and Changrip universal pullers. Armstrong-Bray & Co., 5368 Northwest Highway, Chicago 30, Ill.

□ 57. ALL PURPOSE FASTENER — Printed matter tells about the New Rollpin, available in wide variety of sizes. Will not shake loose. Vibration-proof. Easy to drive in pre-drilled hole. Locks

LATEST TRADE LITERATURE

(This is Page 24)

Check Over All Five Pages!

19, 20, 22, 24 and 166

Write manufacturers direct, (mentioning PURCHASING Magazine, please); Or, let us have a short letter on your Company letterhead listing numbers of items you want and month of issue.

This service also applies to numbered news items in New Products Section, Pages 128-162.

Reader Service Department

PURCHASING Magazine

205 E. 42nd St., New York 17, N. Y.

permanently in place. Easy to deliberately remove. No heads. Replace tapered pins, grooved pins. Production time savers. Samples available. Elastic Stop Nut Corporation of America, 2330 Vauxhall Road, Union, N. J.

□ 58. METAL FABRICATING —

Booklet "Science and Skill in Sheet Metals" details facilities and services available for metal fabricating in steel or aluminum — design and engineering services, stamping, drawing, forming, welding, tinning, coating, etc. Geuder, Paeschke & Frey Co., 1520 W. St. Paul Ave., Milwaukee, Wis.

□ 59. SMALL MOTORS — Bulletin GES-3565, covers subject of standardizing small motors, and the advantages thereof. Apparatus Dept., General Electric Co., Schenectady, N. Y.

□ 60. LUBRICANTS, CHEMICALS —

Booklet "The Houghton Line" covers processing and maintenance products for the industries, including lubricants, mechanical leathers, metal and textile oils and chemicals. E. F. Houghton Co., Philadelphia 33, Pa.

□ 61. NEOPRENE GARMENTS —

Folder shows styles and gives detailed information about Neoprene garments for protection against greases, oils and most acids. A. J. Tower Co., 24 Simmons St., Boston, Mass.

□ 62. RELAYS — Catalog 109 gives complete information on full line of relay and electro-mechanical assemblies — 150 models for every electrical and electronic ap-

plication. Potter & Brumfield, 233 No. Main St., Princeton, Ind.

□ 63. FASTENERS — Bolts, Screws, Washers, Nuts, etc., in steel, brass or stainless steel. New catalog, 124 pages covers thousands of items. Sterling Bolt Co., 4640 W. Lake St., Chicago 44, Ill.

□ 64. SAFE FLOORS — Free sample of Sol-Speedi-Dri, oil and grease absorbent, which soaks up all fluids in short order, will be sent to you by Waverly Petroleum Products, 1724 Chestnut St., Philadelphia, Pa.

□ 65. FOLDING CARTONS — Brochure "101 Ways to Get Better Packaging" is handy reference booklet for the package buyer. Copy will be sent to you by W. C. Ritchie & Co., 8830 Baltimore Ave., Chicago, Ill.

□ 66. FILTERS — Booklet gives detailed information on sizes, capacities and motors, as well as descriptions of various metals of which filters are constructed, and describes the complete operating cycle of filters including back-wash system which permits quick cleaning. Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.

□ 67. STAINLESS STEEL POWDER — Specifications and physical properties of Vasco 18-8 Stainless steel powder are shown in Vol. IX No. 2, Metal Powder News. Charles Hardy, Inc., 420 Lexington Ave., New York, N. Y.

□ 68. CARBIDE TOOLS — Solid tungsten carbide rotary files, reamers, end mills, internal grinding tools, boring bits and knurls, are described in 12-page folder just issued by Charles L. Jarvis Co., Middletown, Conn.

□ 69. LUBRICATION — Spray valve for spraying grease or oil onto open gearing, slide surfaces, and other bearing areas, is described in Bulletin 60, issued by The Farval Corp., 3251 E. 80th St., Cleveland 4, Ohio.

□ 70. STEEL CONTAINERS — Directory lists types of steel containers and shows name and address of the makers of the different types. Copy available from the Steel Shipping Container Institute, Inc., 570 Lexington Ave., New York, N. Y.

(Please turn to page 166)

For Extra Safety and Convenience



use
**STANDARDIZED
FEEDER DISTRIBUTION
PANELBOARDS**

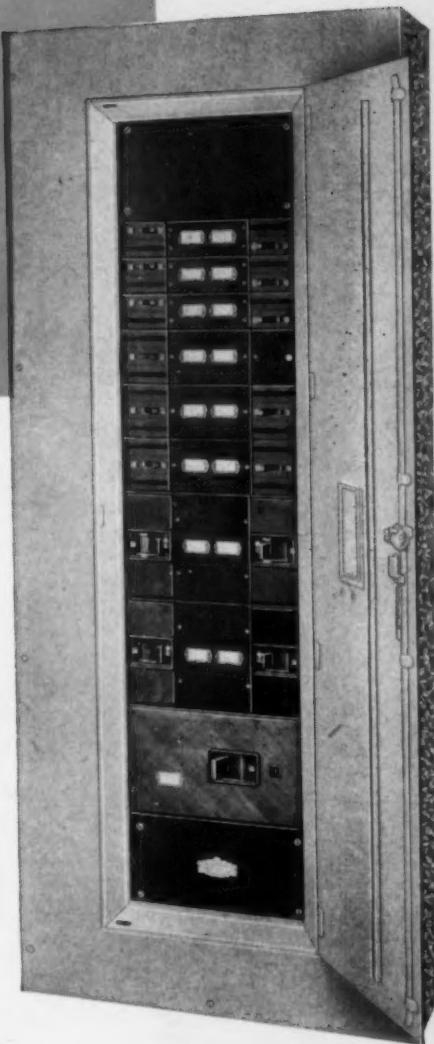
*with automatic
circuit-breaker
protection*

ADD TO **FA** FEEDER PANELBOARDS the extra safety (no overloading) and convenience (nothing to replace) of automatic circuit breaker protection and you have a panelboard that's as popular as it is dependable.

For economy and ease of installation, finished panelboards are built to your requirements using standardized boxes designed to meet any job need. Boxes are shipped from stock . . . with removable ends to permit drilling conduit openings on the job. Panels are readily installed after boxes are in position.

The circuit breakers, too, are standardized as to dimensions and fastenings, permitting ready interchangeability or replacement. 50 amp. frame size has thermal trip only; 100 amp. and larger have combination thermal-magnetic trip.

Of compact design, minimum space is required for these **FA** Circuit Breaker FEEDER PANELBOARDS without sacrificing capacity or installation features. For complete details, talk it over with your **FA** Representative (he's listed in Sweet's).



Capacities: 15 to 600 amps. in four frame sizes (50-100-225 and 600 amp.), 250 and 600 volts AC or DC. Non-interchangeable trip elements are standard on the two smaller frame sizes; interchangeable trip on all others. This feature is also available in 100 amp. frame on special order at slight additional charge.



Frank Adam Electric Co.
ST. LOUIS 13, MISSOURI

Makers of **BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER**



Cheaper
by the foot
to cut
sheet metal with
STANLEY
UNISHEARS

STANLEY

Reg. U. S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL



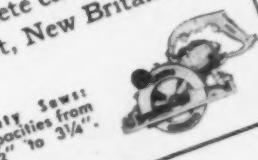
Model No. 214A. Cuts up to 14 gauge hot rolled steel at speeds up to 20 feet per minute.

You can easily cut more feet of sheet metal per man-hour with Stanley Unishears . . . so each foot of cutting costs you less. Models to cut 18 ga., 16 ga., 14 ga., 12 ga., 10 ga., 8 ga., and 6 ga. Speeds, according to gauge, up to 20 feet a minute. Portable models easier to handle than snips. Make smooth cuts on straight work, curves, angles, notches . . . inside or out. Blades replaceable and easily resharpened. Full anti-friction bearing construction.

This trade mark on electric tools tells you the most important thing you want to know about tools

When you buy an electric tool you have to take somebody's word about gears, motor, bearings, shaft, switches, power, etc. Whose word about tools could be more reliable than the word of "Stanley"—tool makers for over 100 years. On an electric tool the name Stanley means the tool is quality built, thoroughly tested and honestly rated. Covered by a generous guarantee and serviced by a network of Stanley Service Stations. See your dealer or write for complete catalog. Stanley Electric Tools, 485 Myrtle Street, New Britain, Connecticut.

Safety Saws:
Capacities from
2½" to 3¼".



Bench Grinders:
Wheel capacities:
6" x 3/4", 7" x
1" and 10" x 1".



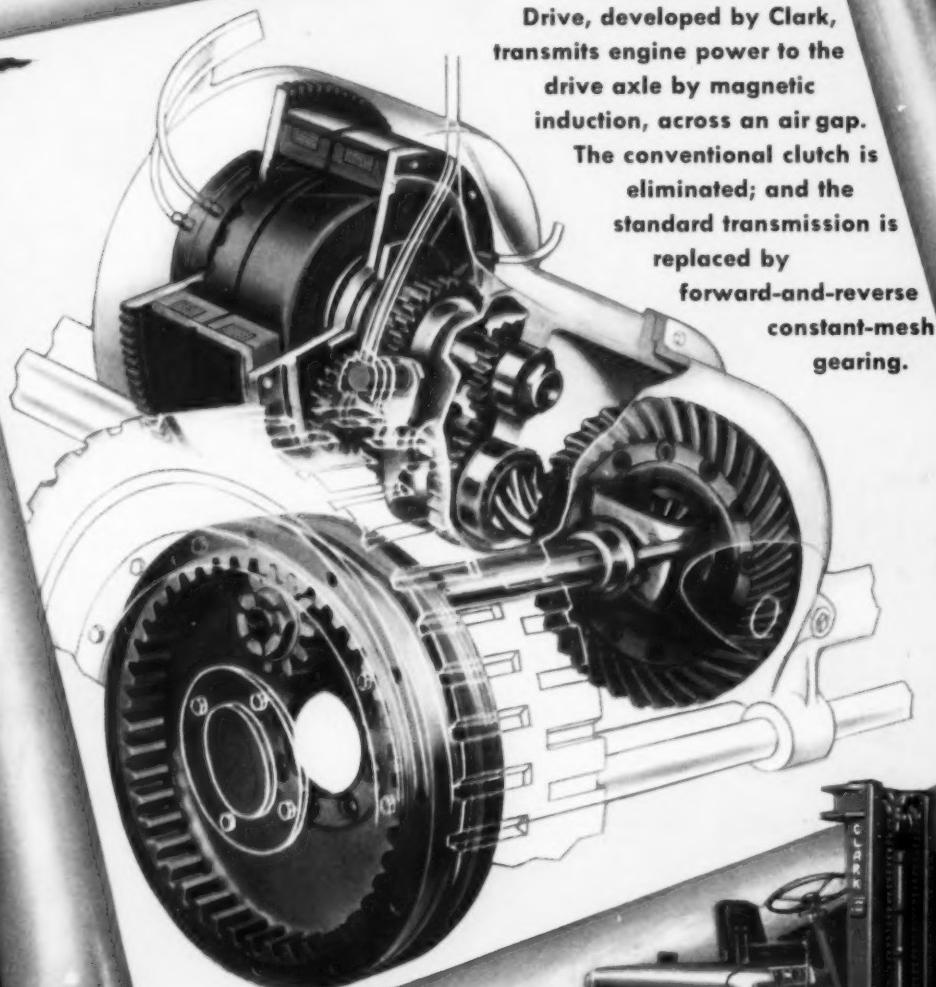
Electric Drills:
3/8", 1/2", 5/8",
1/2", 5/8", 3/4",
and 1" in steel.



Electric Hammers:
Capacity, 1 1/8".

CLARK Dynatork Drive

POWER CLARK FORK TRUCKS



The Dynatork Drive, developed by Clark, transmits engine power to the drive axle by magnetic induction, across an air gap. The conventional clutch is eliminated; and the standard transmission is replaced by forward-and-reverse constant-mesh gearing.



Available on UTILITRUCS 6000, 7000, 10,000 lbs.
CARLOADERS 3000, 4000, 5000 lbs.
and YARDLIFTS, 4000, 6000 lbs.

TURN
PAGE
FOR MORE
DYNATORK DETAILS

CLARK EQUIPMENT COMPANY, INDUSTRIAL TRUCK DIVISION
BATTLE CREEK, MICHIGAN

DYNATORK DRIVE

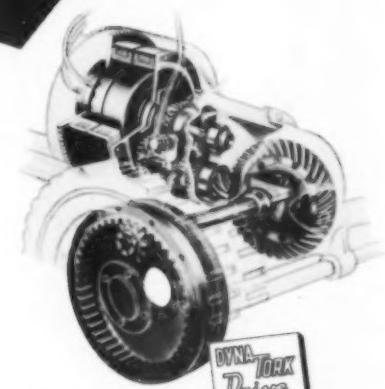
*Makes
a
Better
CLARK
CARLOADER*



FASTER! *from forward to reverse*
IT DOES MORE WORK!

EASIER! *to operate than your car*
IT DOES MORE WORK!

BETTER! *neutral tests prove*
IT DOES MORE WORK!



*Trade Mark Reg. U. S. Pat. Off.

Here's a combination destined to make Materials Handling history—

The husky and versatile gas-powered Carloader fork-lift truck of 3,000-, 4,000- and 5,000-lbs.-capacities has done more than any other one model to establish Mechanized Materials Handling as essential to modern high-speed, low-cost production.

CLARK ELECTRIC AND GAS POWERED
FORK TRUCKS
AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 66, MICH.

Please send: Literature on Carloader with Dynatork Drive
 Movie Digest Material Handling News

Name _____

Firm Name _____

Street _____

City _____ Zone _____ State _____

The revolutionary Dynatork Drive cuts deeply into handling costs by increasing as much as 20 per cent the amount of work a fork truck can do. It transmits engine power to the drive wheels by magnetic induction, through an air gap—no clutch, no conventional transmission. It's unique because it does not have to be brought to a stop before reversing.

This combination of CARLOADER* and DYNATORK* DRIVE constitutes a forward step of enormous significance to the science of Materials Handling. You'll want to know all about it. A Clark bulletin will bring you the facts in convenient form. Write for it.

PRODUCTS OF CLARK—TRANSMISSIONS • FORK TRUCKS & TRACTORS • AXLE HOUSINGS • GEARS AND FORGINGS • RAILWAY CAR TRUCKS • ELECTRIC STEEL CASTINGS • AXLES • TRACTOR UNITS



BEMIS

Burlap general headquarters will prove to be the dependable, convenient, ready-to-ship source for your burlap piece goods requirements, whether you need a bale or several carloads . . . and whether you want the famous Angus that only Bemis imports, or one of the standard grades.

Bemis is Your Best Source for These, Too... Paper furniture covers—Cotton yard goods—Paper tubing for chair legs, etc.—Tite-fit Tubing—Mailing bags and bags for small parts—Canvas covers.

Here's why Bemis is your Burlap G. H. Q.

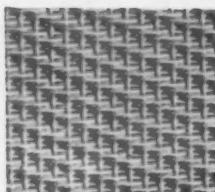
- Largest importer — You benefit from our large, complete stocks.
- Experience — Producers and users alike accept Bemis' grading of Indian burlap as the standard for the industry. You benefit from our knowledge of quality.
- Facilities — 16 plants and 15 additional sales offices, strategically located, assure a dependable source of supply and prompt service.



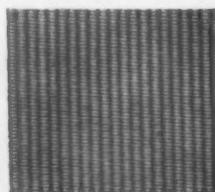
Bemis "America's No. 1
Bag Maker"

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Cleveland • Denver
Detroit • Houston • Indianapolis • Jacksonville, Fla. • Kansas City • Los Angeles • Louisville
Memphis • Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City • Omaha
Phoenix • Pittsburgh • St. Louis • Salina • Salt Lake City • San Francisco • Seattle • Wichita

FOR METALLIC FILTER CLOTH . . .
Today it's
Roebling!



DUTCH WEAVE TWILLED FILTER CLOTH



DUTCH WEAVE FILTER CLOTH



STRANDED FLEXIBLE FILTER CLOTH

WHATEVER your requirements, Roebling can supply Metallic Filter Cloth woven of the right metal or alloy, and in the right weave and mesh, for topmost efficiency and service life. The weaves illustrated above provide the extra strength needed for higher pressure or vacuum. They are adaptable for almost any type of filter . . . smooth-woven and easy to clean . . . provide free discharge of filtrate, and hold back the finest solids.

Mail coupon below for full information about Roebling Metallic Filter Cloth.

WOVEN WIRE FABRICS DIVISION

JOHN A. ROEBLING'S SONS COMPANY
ROEBLING, NEW JERSEY



Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Please send me full information about Roebling Metallic Filter Cloth.

Name
Company
Address
City State

A CENTURY OF CONFIDENCE

F.O.B. *filosofy of buying*

UNDERSTATEMENT of the month is a headline on Sam Dawson's syndicated business column, distributed by the Associated Press: *Retail Prices on Several Items Going Up in Stores.*

you will buy in the months ahead, and at what price you'll stop buying. From that they will work back to how much raw material they must buy if their companies are to keep in maximum health, assuring as many jobs and as many hours of steady work as possible.

"And they must decide at what price to buy materials. Otherwise their factories may be shipping goods to merchants at prices so high that the goods will just stay on the shelves.

"If these purchasing agents guess wrong about such things, their companies will suffer, other employees will be laid off, and the agents themselves will be looking for jobs. That's why when they guess it's for keeps, not for fun."

EVERYBODY is an expert in the other fellow's field. When management complains about low productivity, labor counters with a complaint of inefficient management. We quote from the opening address by the president of the British Trade Unions Council at its recent meeting, based on his study of American Trade Union practice:

"Where we find such people saying that it is impossible for their undertakings to pay better rates of wages . . . we must have experts in our unions who can show . . . how the claims of the employees can be met by higher efficiency and more scientific methods *on the managerial side.*"

WE have long been familiar with those unsavory business characters, the "black marketeer" and the "gray marketeer". Speaking before a recent meeting of the Chicago P. A. Association, Hiland G. Batcheller of Allegheny Ludlum Steel Corporation added the vicious "red marketeer" to this undistinguished company. He defined the red marketeer as "any one in the steel-consuming industry taking advantage of his purchasing power to procure more than he needs. . . Such an individual might as well ship the steel to Stalin himself."

EVEN though things may be getting tougher day by day, there are some who manage to look on the brighter side. A businessman who was recently asked how he was feeling replied, "Oh, much better than next year, thank you."

IT has frequently been pointed out that periods of emergency provide the opportunity for superior purchasing performance. It is equally true that they provide the opportunity for superior service by suppliers. One company that has recognized this in a practical way is Hercules Equipment & Rubber Company of San Francisco, which has distributed a card listing the home telephone numbers of a dozen key men of their organization who can be contacted when emergency work or materials are needed after business hours, during the night, or on holidays.

WHENEVER some one talks about the economic significance of purchasing, there are those who sniff and say that we are taking ourselves a lot too seriously. But here's what business columnist Sam Dawson has to say about it.

"Purchasing agents are guessing how much of various finished goods

FAME is fleeting. We are reminded of this sad fact by noting that the publishers of "Who's Who in America" also publish a companion volume entitled "Who Was Who in America."

THE National Association of Cost Accountants has coined a phrase to describe the role of industrial motion pictures. It refers to them as "armchair plant visits". A series of such "visits" is now planned by the New York Chapter, covering the oil industry, machine tools, paper, textiles, plastics, and materials handling and storage operations, as a preparation for discussion of cost problems in these fields.

INTEREST in centralized purchasing is spreading apace. Recent callers at this office, in search of further information, included visitors from Sweden, France, and Central America.

COLORADO State officials, girding for civilian defense, are somewhat disturbed to find that the only tangible equipment still available from the \$172,000 defense program of World War II consists of 500 white tin helmets gathering dust in the sub-basement of Denver City Hall—the unissued surplus from 15,000 originally purchased. Everything else that might conceivably be of use now—gas masks, stirrup pumps, the other 14,500 helmets, insignia, handbooks, etc.—were classified as expendable and have disappeared without trace.

Among the records, searchers unearthed vouchers for 40 sets of dueling gloves and masks, plastrons, and fencing foils. The former State commander of the defense force hastens to go on record that these were never intended to arm the defenders. "The fencing equipment was purchased in connection with that silly program of adult education. We also had dancers."

THE City of Worcester, Mass., adopted centralized purchasing only a few months ago, and can happily report that its investment in businesslike buying is being returned on the first major contract. Thanks to better competition and negotiation, methodical inspection and a price formula based on B.t.u. content, the City is saving the tidy sum of \$16,852 on its fuel bill alone, says the Worcester *Gazette*. They are getting better coal, too, so that there will be additional economies in ash handling and removal. It all adds up to the governmental buyers' slogan, "More Mileage from the Tax Dollar."

KEX INDUSTRIAL WIPING TOWELS



ARE DISTRIBUTED NATIONALLY

Regardless of where your plant is located, whether large or small, there is a KEX Distributor near you.

Plant Managers like KEX Service because it fits so well into their plan for smooth, efficient plant operation—for better housekeeping.

Plant Engineers like KEX Industrial Towels because they are made for wiping—safe to use... have no ragged edges to get caught in machinery... so soft they will not mar delicate surfaces nor leave excessive lint.

Purchasing Agents like KEX Service because it provides a constant, reliable, orderly source for clean, absorbent wiping towels.

Employees like KEX Towels because they are *real* wiping cloths, not make-shifts—are good tools with which to do a faster, more efficient wiping job—always the same size, bound for safer use, scientifically clean and readily available.

Follow the lead of industrial leaders who overlook no opportunity to keep operating costs down—and efficiency up. Insist on KEX Industrial Wiping Towels.

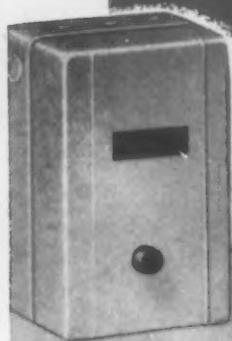


Nothing to buy—no expensive inventory—just a low monthly rental. Look in your classified telephone book for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16.

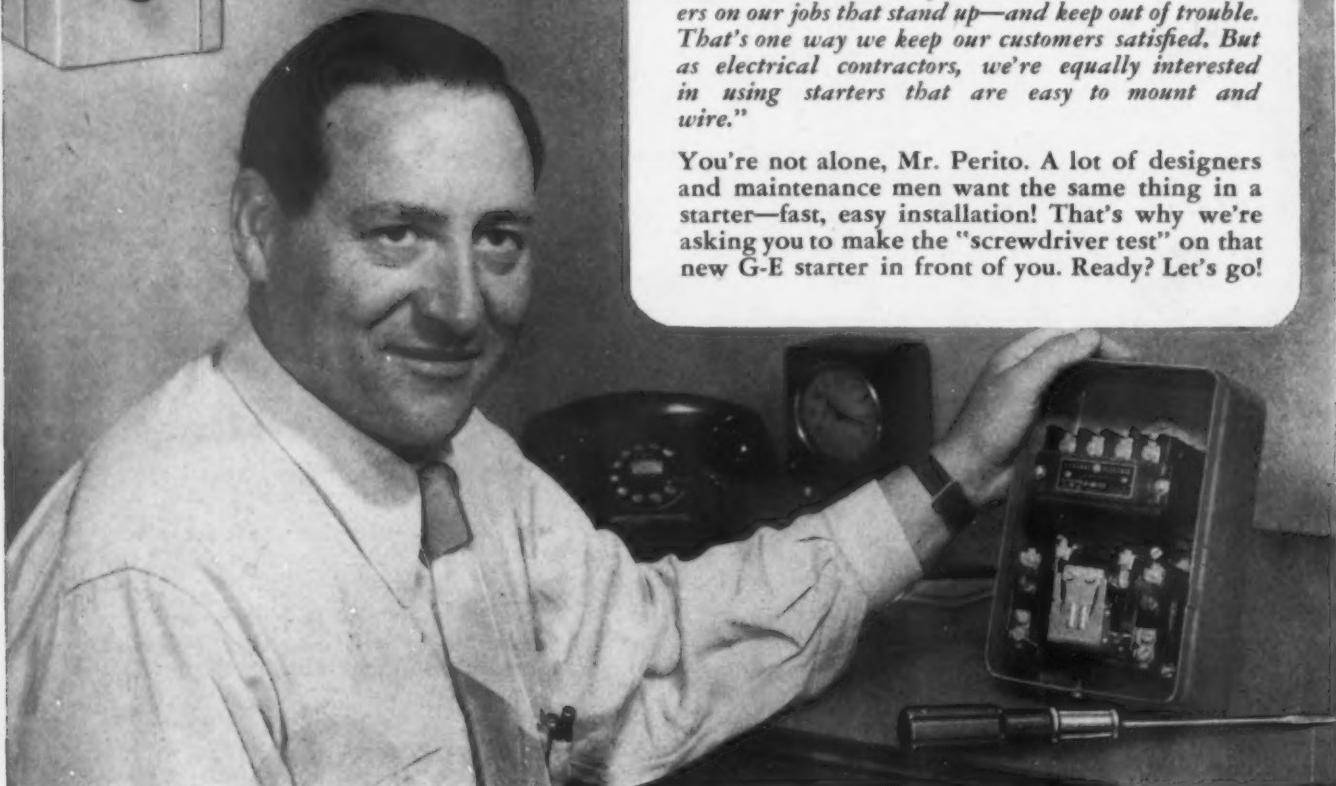
"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.





MOTOR STARTERS



...easier to

T.G. PERITO, ELECTRICAL CONTRACTOR, LEARNS

Mr. Perito: "Naturally we want to use motor starters on our jobs that stand up—and keep out of trouble. That's one way we keep our customers satisfied. But as electrical contractors, we're equally interested in using starters that are easy to mount and wire."

You're not alone, Mr. Perito. A lot of designers and maintenance men want the same thing in a starter—fast, easy installation! That's why we're asking you to make the "screwdriver test" on that new G-E starter in front of you. Ready? Let's go!



1 Mr. Perito: "How is this contactor mounted in the case?"

By means of keyhole slots you see in the contactor base, Mr. Perito. After you've mounted the empty case on the wall or a machine, you locate the keyhole slots over the mounting screws and the contactor slips into place!



2 Mr. Perito: "Lots of knockouts, I see!"

You'll find these on every side of the case—more than enough to give you faster, neater installations. Plenty of room on the inside, too, and notice how the light grey finish on the inside gives you plenty of reflected light!

GENERAL  ELECTRIC

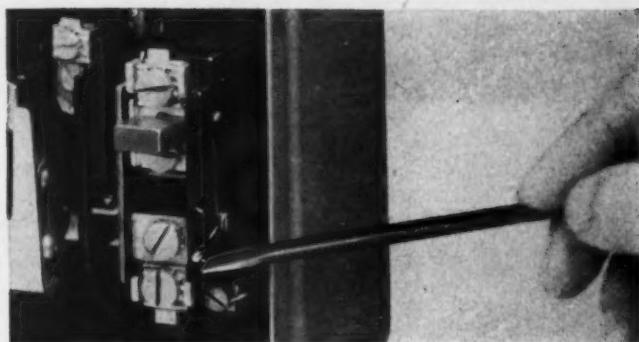
730-18

install for these 6 reasons

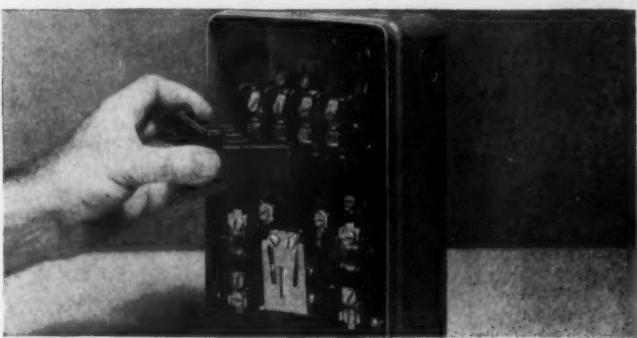
ABOUT THESE IMPORTANT FEATURES WITH THE "SCREWDRIVER TEST"



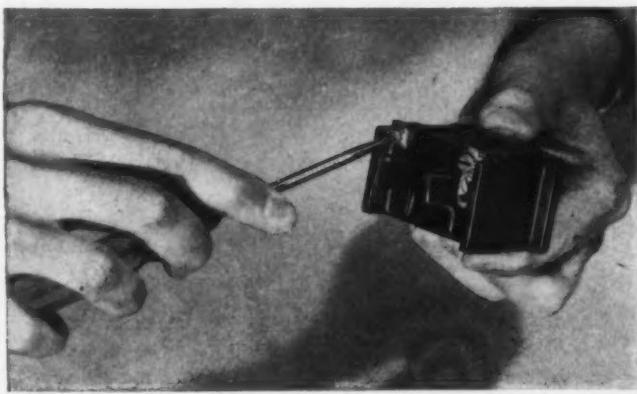
3 Mr. Perito: "Are all the terminals easy to get at?" Every one of them is up front where it's easy to get at, and wire. And they're big terminals with panhead screws and saddle-type connectors that ride up with the screw head. The stripped wire simply slides into place and is easily secured with a turn of your screwdriver.



5 Mr. Perito: "How do I set the overloads?" Easy—and you don't have to take the starter apart to do it. Flip that little lever and it's on "Automatic." Flip it back and it's on "Manual." Heaters are in the front, can be changed without disturbing any wiring.



6 Mr. Perito: "What about maintenance?" Once this new G-E starter is installed, it stays installed. There's no need to remove the case for ordinary maintenance or even to replace or reverse contacts. Just remove the arc chute and there are your terminals.



4 Mr. Perito: "Tough-looking coil! Is it new?" Right! It's called the "Strongbox Magnet Coil" and it's an exclusive with the new G-E starter line. Feel how solid it is! If your electrician's screwdriver slips, it can't hurt the windings—they're safely locked in a block of molded plastic. And oil, dust or water can't get at them, either!

WHY DON'T YOU "BUY ONE AND COMPARE?"



See for yourself why this new line of G-E motor starters lasts longer, costs less to install than almost any other starter you can buy. Your G-E representative or authorized G-E agent or distributor can supply you from stock in NEMA sizes 0, 1, 2 and 3 for a-c motors up to 50 hp. For a complete description, write for Bulletin GEA-5153, Section 730-18, Apparatus Dept., General Electric Company, Schenectady 5, New York.

MINIATURE PARTS
*to Precision
Tolerances*

METAL STAKING
Stays Tight!

That's Why
INSUROK T-725

**IS USED IN THIS HIGH-FREQUENCY FUNCTION SWITCH
MADE BY GRIGSBY-ALLISON COMPANY**

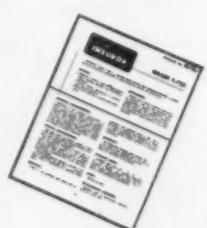
For this four-way function switch, which selects AM, FM, phono, or TV, Grigsby-Allison had to find an insulating material which would punch readily into intricate shapes. It had to possess high impact strength so that metal T-slugs, staked by a special method, would not loosen. Finally, because of the high frequencies involved, excellent electrical properties were needed in the material—even after sanding to close tolerances.

INSUROK T-725 has just the right combination of properties to meet these requirements. Equally impor-

tant, Grigsby-Allison engineers can depend on these properties remaining uniform from shipment to shipment.

In hundreds of similar applications, laminated and molded INSUROK are solving difficult problems for industry. Investigate INSUROK for your product, today.

**Write for
Descriptive Data Sheet.**



INSUROK*
Laminated and Molded Plastics

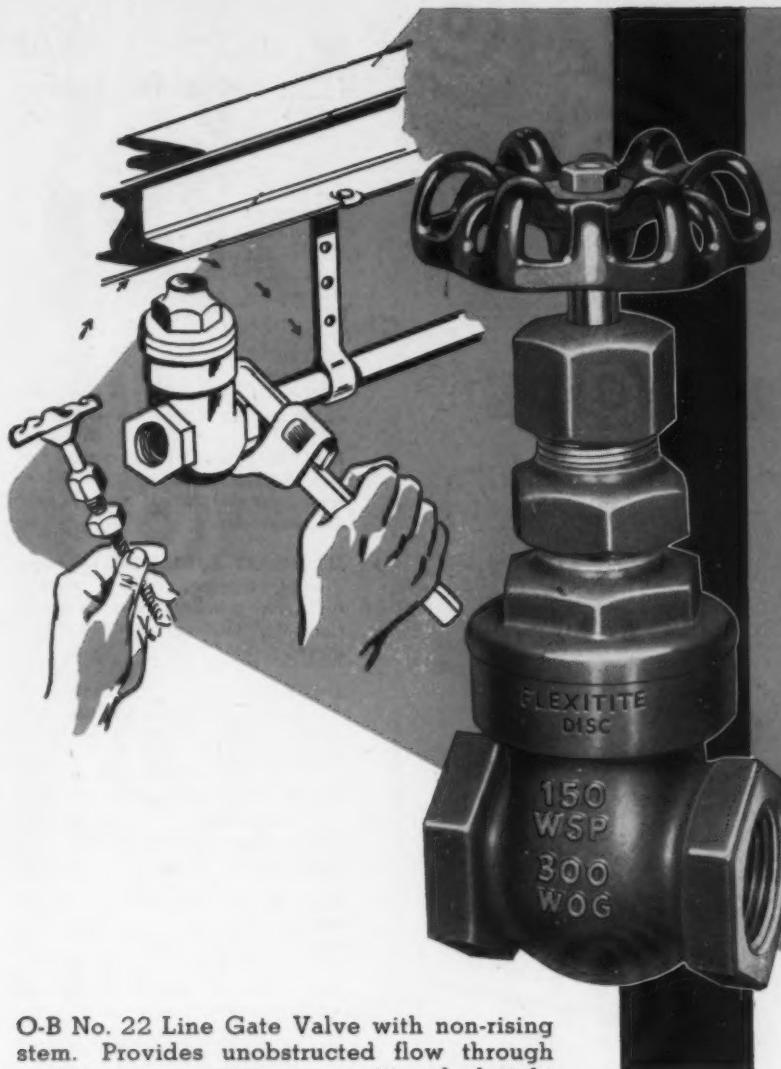
*Reg. U. S. Pat. Off.

The RICHARDSON COMPANY

FOUNDED 1858—LOCKLAND, OHIO

2791 Lake St., Melrose Park, Illinois (Chicago District)

SALES OFFICES: CLEVELAND • DETROIT • INDIANAPOLIS • LOCKLAND, OHIO • MILWAUKEE • NEW BRUNSWICK, N. J. • NEW YORK • PHILADELPHIA • ROCHESTER • ST. LOUIS



THIS VALVE IS NEVER CRAMPED FOR SPACE

O-B No. 22 Line Gate Valve with non-rising stem. Provides unobstructed flow through port in open position or positive leak-tight shutoff when closed. Other O-B industrial gate valves are available for various pressures in rising or non-rising stem types, with soldered or threaded pipe ends.

Where working space is restricted, you will greatly appreciate the convenient take-down feature of O-B gate valves. These sturdy valves unscrew at the stuffing box, allowing stem, stuffing box, and packing nut to come out in one piece.

With these parts removed, the valve body with disc inside and center piece can be easily threaded to the pipe ends--even in cramped quarters where only a minimum of free-throw space is available. The result is an appreciable saving in make-up time and lower valve installation costs for you.

A special feature of all O-B gate valves is the Flexitite Disc.* The slight flexibility of this disc permits it to adjust to minor irregularities of the seat and assures a leak-tight closure.

Contact your local Ohio Brass distributor for any of your industrial valve needs.

OHIO BRASS COMPANY, MANSFIELD 5, OHIO

* Reg. U. S. Pat. Office.

4016-V

Ohio Brass  **VALVES**

FOR DOMESTIC AND

INDUSTRIAL USE

DECEMBER, 1950

Want Additional Product Information? See Page 19.

35



Silvery or colored Alumilite*, oiled, buffed, color buffed, tumbled, burnished—Alcoa offers you all these finishes on Alcoa-produced screw machine parts.

And all at moderate prices. Because Alcoa is set up to handle special finishes on a volume basis, right in the same plant where parts are machined. No added expense or delay of transshipping.

Complete production facilities, and long years of finding the one best method for every finish, enable Alcoa to give you finishes that measure up to the quality of the parts themselves as produced by Alcoa.

Need a quality screw machine part? For quick service and prompt quotation, phone your local Alcoa office. **ALUMINUM COMPANY OF AMERICA, 2130M Gulf Building, Pittsburgh 19, Pa.**



MEN trained specifically in machining aluminum and magnesium alloys.

MACHINES handling all types of rod, bar and tubing up to 3½" O.D.—from hand machines to multiple spindle automatics.

SECONDARY OPERATIONS—Burring, drilling, tapping, milling, slotting, centerless grinding, press forming, stamping, marking, thread rolling, others.

FINISHING—Tumbling, burnishing, chemical dip, oiling, buffing, color buffing, plain or colored Alumilite* finishing.

FINISH QUALITY CONTROL—Laboratory check of Alumilite finishes, regular production checking, final visual inspection.

CONTINUOUS INSPECTION by operators as well as inspectors. Begins with first piece inspection, is continued by operator equipped with all necessary gages; process and final inspection employing statistical methods.

LARGE STOCK INVENTORY, adequate to initiate most jobs without waiting for mill shipment of stock.

DESIGN AID can give you a better product or lower costs, or both. New orders are analyzed by Alcoa engineers for improvements or cost reduction.

ASSEMBLY AND PACKAGING—Alcoa is set up to turn out parts; finish and assemble them, package and ship completed products (not necessarily all-aluminum) ready for immediate resale.

MACHINED FORGINGS, CASTINGS, IMPACT EXTRUSIONS—Gives you the advantages of one source for parts and secondary operations.

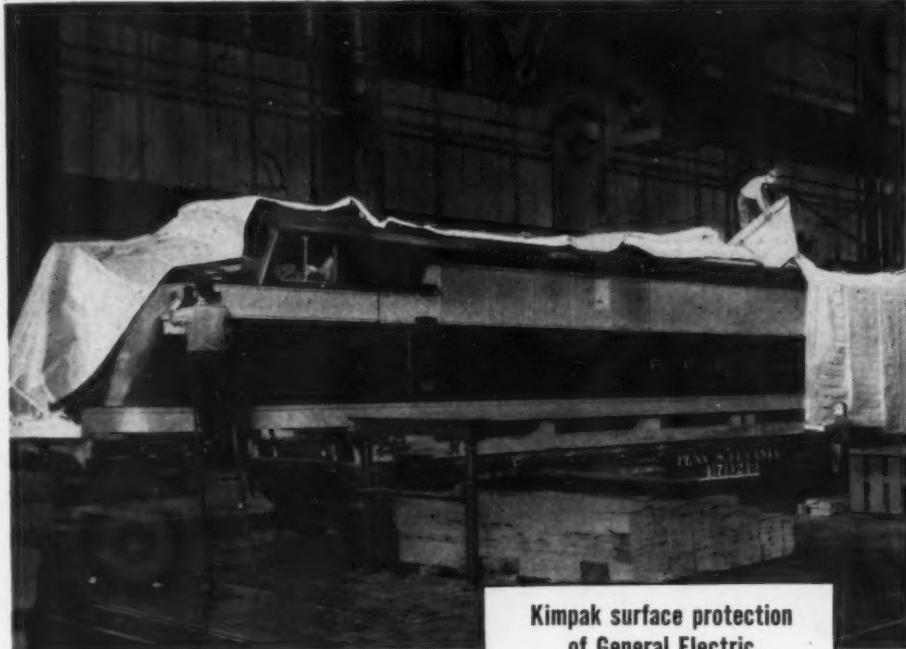
LOW COST, FAST DELIVERY—Alcoa offers you all these at competitive prices and dependable delivery schedules.

*Patented Process

ALCOA ALUMINUM SCREW MACHINE PRODUCTS



Kimpak^{*} Float Packaging



Kimpak surface protection
of General Electric
Diesel locomotive



Fluoretor, a product of Menlo
Research Laboratories,
Menlo Park, California.

From delicate instruments to giant Diesel locomotives— maximum protection at lowest true cost!

In the world's largest shipping package a 231-ton Diesel-electric locomotive is assured of the finest surface protection. It's protected for a damage-free trip overseas by soft, strong, shock-absorbent KIMPAK^{*} creped wadding. And KIMPAK affords equal shipping protection to instruments, furniture, flowers, food and even precious liquids in delicate glass vials. For KIMPAK is designed to defend your product against all kinds of shipping hazards—from vibration, shock, pressure marking, rubbing, scratching.

KIMPAK comes in rolls or sheets—in a wide range of guaranteed thicknesses and specifications to cover all four basic

Methods of Interior Packaging: Surface Protection, Blocking and Bracing, Flotation, and Absorbent Packaging. So easy to apply, it saves literally hours in the shipping room. So clean, soft and non-abrasive, it serves to "dress up" a package, as well as to reduce damage in transit.

Try KIMPAK soon. You'll find it not only cuts your shipping costs, but provides "float packaging"—the world's most effective shipping protection. See your nearest KIMPAK distributor listed in the classified telephone directory under "Packing Materials" or "Packing Materials—Shipping"; or write to Kimberly-Clark Corporation, Neenah, Wis.



Outboard motor, manufactured
by Johnson Motors,
Waukegan, Illinois.

FREE BOOKLET!

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin P-1250

Please send me free, the illustrated
KIMPAK booklet, "Float Packaging."

Name _____

Firm _____

Address _____

City, Zone, State _____

Kimpak
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES
CREPED WADDING



*T.M. REG. U.S. PAT. OFF. & CAN.

L.C.L.

FREIGHT MERCANDISE SERVICE

fast and dependable

via KATY KOMET
and other Katy Fast Freights

to and from
**MISSOURI, KANSAS,
OKLAHOMA and TEXAS**

speeds shipments
whatever their size



COORDINATED RAIL-TRUCK SERVICE

Just phone your nearest Katy representative and tell him *what* you have to ship and *where* it's going.

From then on, Katy's safe, modern, ON-TIME L.C.L. service takes over until shipment is delivered to your customers' door.

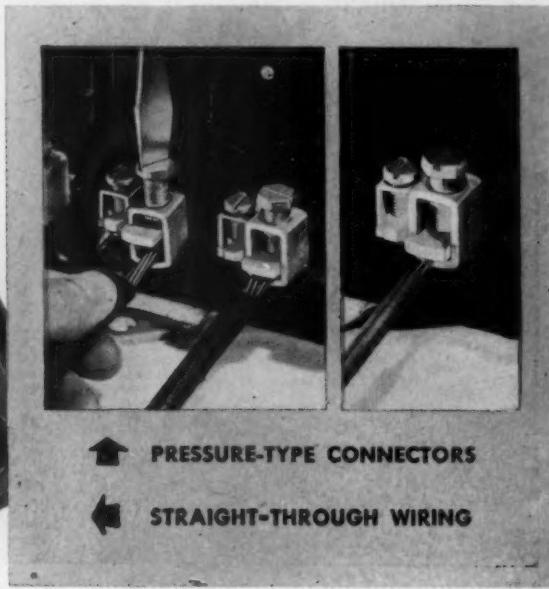
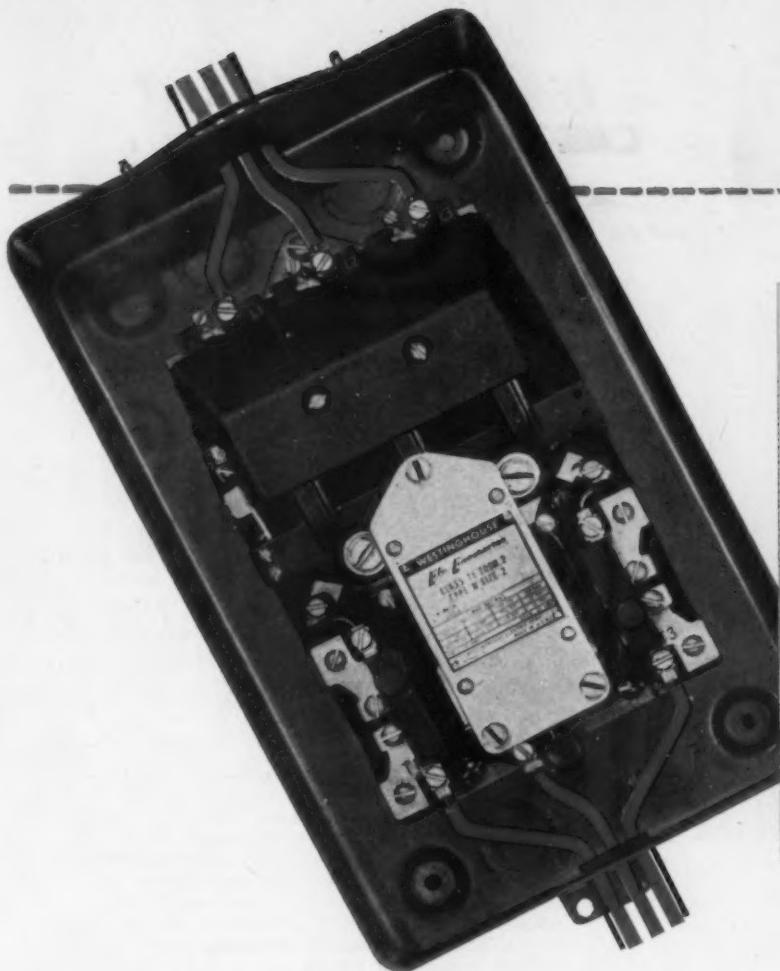
**Free pick-up and delivery
from and to shippers' door**

All cars are worked at our freight houses day of arrival.



Contact your
Katy representative
for details

YOU CAN BE SURE.. IF IT'S
Westinghouse



NEW Life-Linestarter* cuts installation costs 4 ways!

Savings start before they are put in operation...with the new Westinghouse Life-Linestarter. New design features permit faster, easier installation—

1. **Straight-through Wiring**—Plainly marked line terminals are *all* at top—load terminals *all* at bottom, permitting simple, straight-through wiring with uniform lead lengths. All terminals are easily reached from the front.
2. **Pressure-type Connectors** speed the job and provide a positive low-resistance connection for either solid or stranded conductor, in a range of sizes to cover all ratings.
3. **NEMA Standard Mounting**—Open starter units conform to the new NEMA mounting dimensions, also to the NEMA sequence of wiring, permitting interchangeability.
4. **Deep-drawn Lift-off Cover**—Exposes unit for easy access. Fastens securely. May be padlocked. No hinge trouble.

The Life-Linestarter cuts costs in other ways, too—uniformity and completeness of line (NEMA sizes 0

*Trade Mark

through 4, to 100 hp, 600 volts)...superior performance...positive protection. Ask your Westinghouse representative to show you "the inside story"—a Trans-Vision presentation. Or write for booklet B-4677. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

J-30025

Westinghouse

life-linestarter

TOMORROW'S STARTER—**TODAY!**



SPECIAL HARTZELL APPLICATIONS FOR SPECIAL PURPOSES

Show at the right is a Hartzell Vaneaxial Blower "with casters." Easily lifted by two men; compact; powerful. Specially mounted by Hartzell to clear fumes from gasoline tank trucks before and during interior welding

repairs. An example of Hartzell ability to meet special needs. If you have a product utilizing air-movement, or a special need, get in touch with us. We'll work with your engineers to give you what you want.

*There is a Hartzell field representative near you.
If you don't know him, drop us a line; we'll send information or
he'll be there promptly, as you wish.*

— CLIP — and mail now —

Name _____
Company _____
Street & No. _____
City & State. _____

**IF AIR-MOVEMENT
CAN DO THE JOB...**

*Hartzell can move
the air!*

1,250,000

CUBIC FEET PER MINUTE

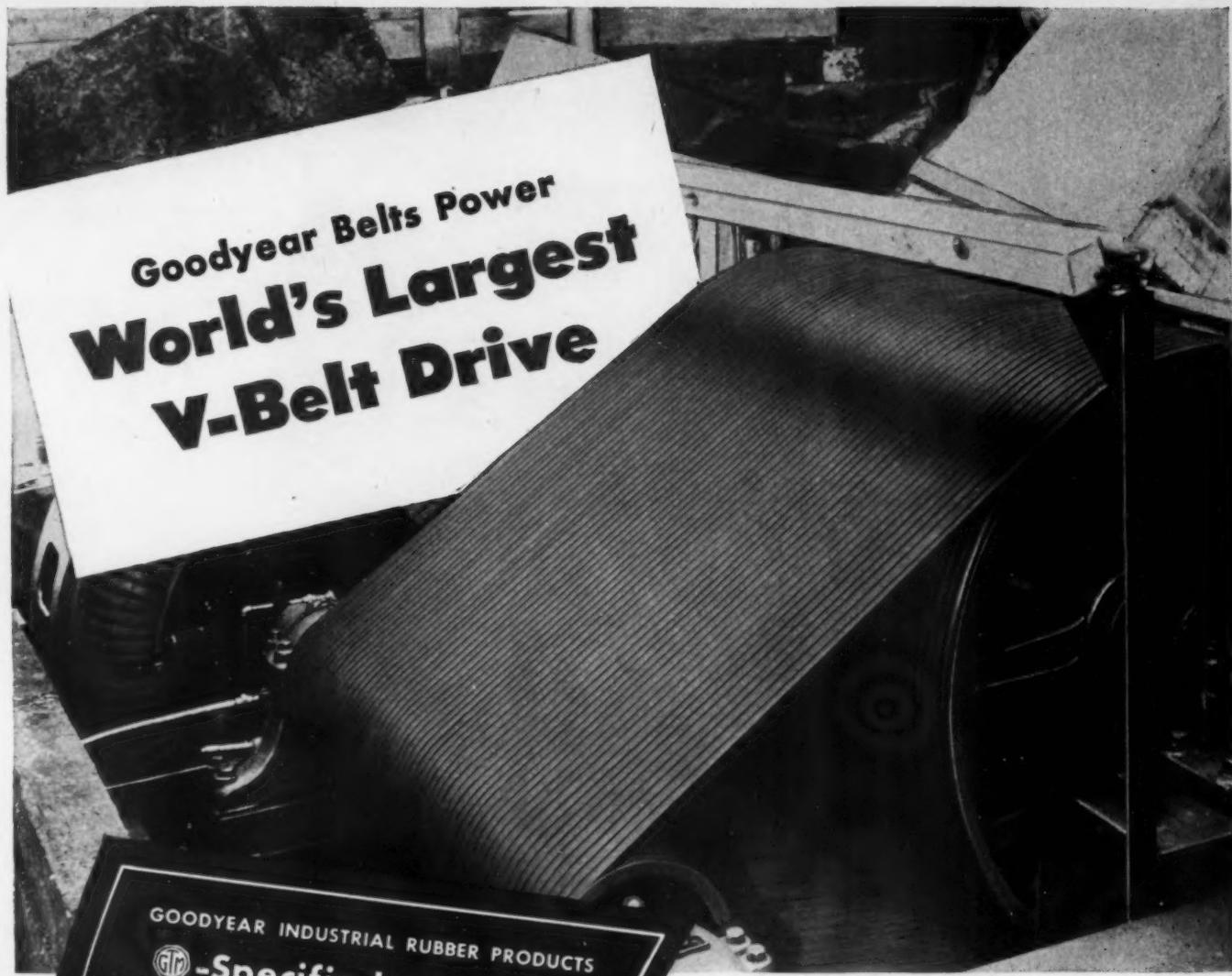
At the left is shown a 22-foot Hartzell fan on a test stand. It isn't a special job. It's a cooling tower fan so good, so powerful, so trustworthy, that it's the standard for an industry where huge-volume air-movement is a distinct advantage. Hartzell builds it. Available in 3' to 22' diameters.

Hartzell ventilation systems are efficiently handling factory ventilation problems everywhere. Operating costs are low, and Hartzell systems remain trouble-free year after year. Ventilation, to Hartzell, includes dissipation of heat, fume and dust concentrations, as well as duct and ductless air-change systems. But Hartzell does many things, where air is concerned, in addition to ventilation. If you need air-movement for any purpose, get Hartzell engineering on the job.



HARTZELL
PROPELLER FAN CO.
DIV. OF CASTLE HILLS CORP.
PIQUA, Dept. D OHIO

PROPELLER-TYPE FANS AND BLOWERS—ROOF VENTILATORS—UNIT HEATERS • ENGINEERING OFFICES IN PRINCIPAL CITIES

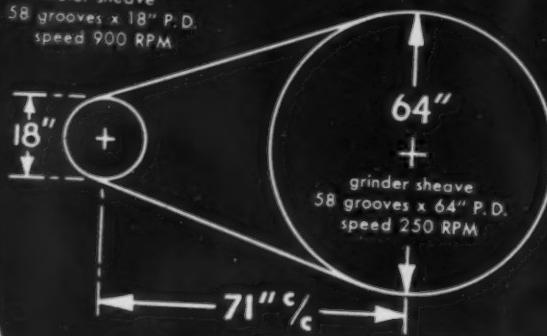


**Goodyear Belts Power
World's Largest
V-Belt Drive**

GOODYEAR INDUSTRIAL RUBBER PRODUCTS
G.T.M. -Specified V-BELT DRIVE FOR

PAPER MILL GRINDER

motor sheave
58 grooves x 18" P.D.
speed 900 RPM



FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING,
TANK LINING built to the world's highest standard of quality,
phone your nearest Goodyear Industrial Rubber Products Distributor.

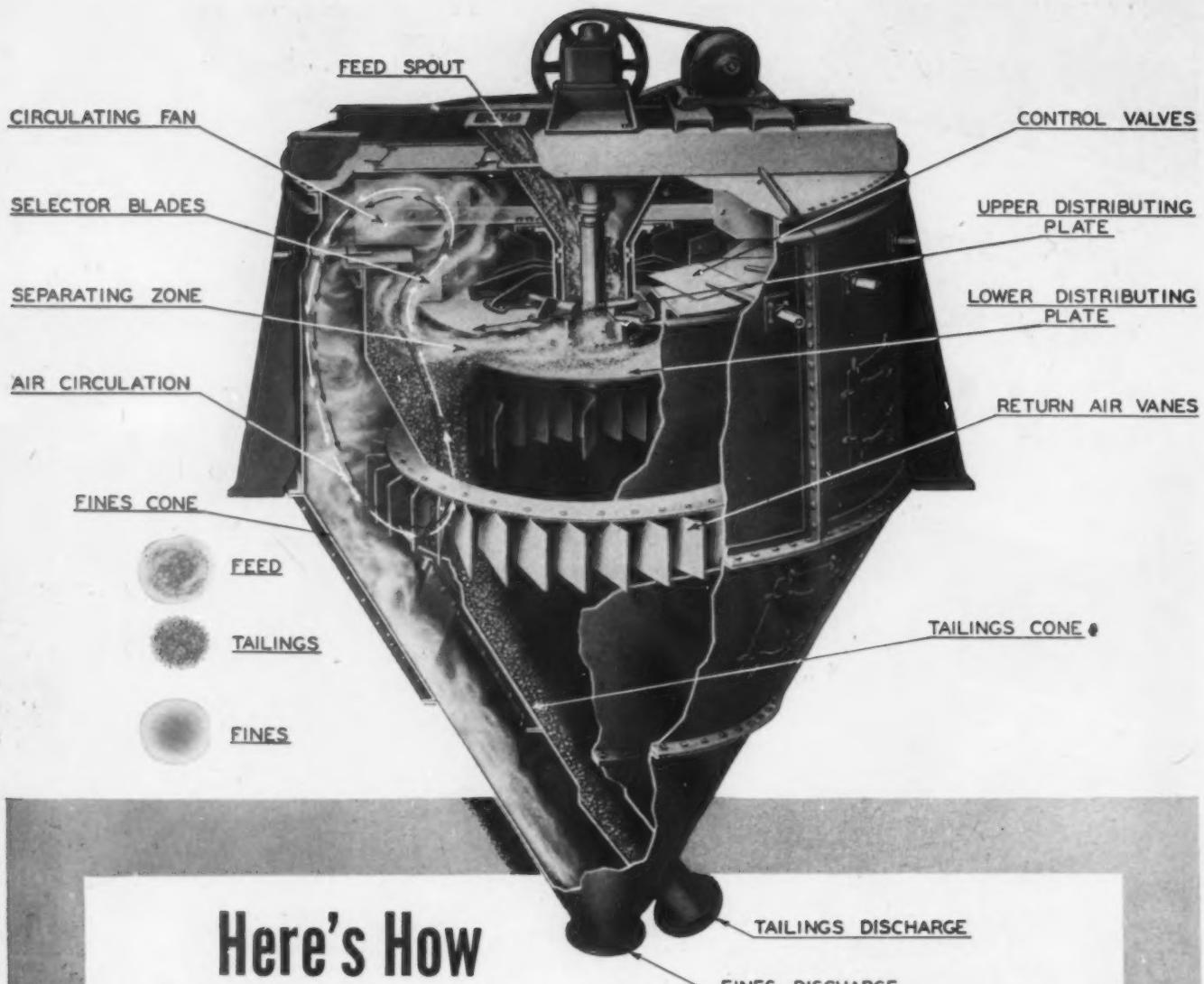
WORLD'S largest V-Belt drive, the above pulp grinder installed in a Wisconsin paper mill is belted with 58 Goodyear HY-T Multi-V-Belts built with synthetic cords. The sturdy synthetic cords that body these belts are designed especially to "give" slightly without snapping under sudden, jolting loads that break ordinary belts. Ask the G.T.M.— Goodyear Technical Man—about HY-T Multi-V-Belts for normal speed, heavy shock-load drives, as well as the other Goodyear V-Belt constructions to meet specific drive demands.

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

GOOD  **YEAR**

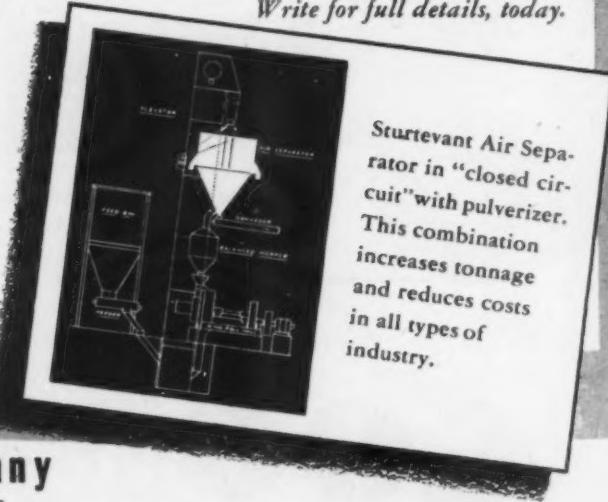
HY-T-T.M. The Goodyear Tire & Rubber Company

THE GREATEST NAME IN RUBBER



Here's How STURTEVANT Air Separators Increase Production of Fines... Lower Separation Costs

- Sturtevant Air Separators effect production savings by increasing output by 25 to 300%... reducing power consumption by as much as 50%.
 - They efficiently carry off all classified materials in any desired fineness from 40 to 325 mesh and finer... eliminate the need of screening in certain applications.
 - Capacities available from $\frac{1}{4}$ to 50 tons per hr.
- Write for full details, today.*

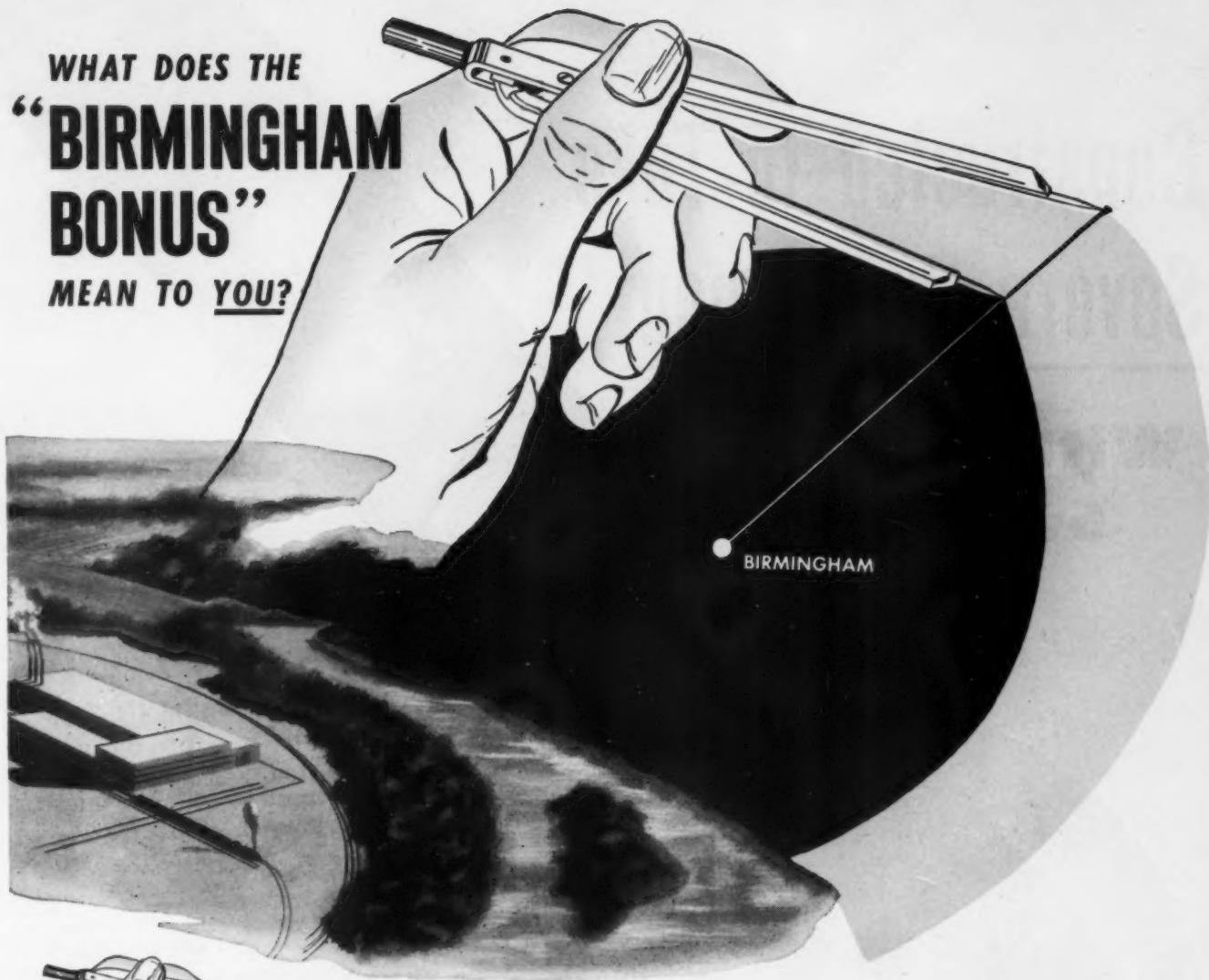


Sturtevant Mill Company

107A Clayton Street, Boston 22, Mass.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

WHAT DOES THE
**"BIRMINGHAM
 BONUS"**
 MEAN TO YOU?



IT MEANS:

... a 15% gross weight reduction increases your marketing area 95%... from 179,000 to 350,000 square miles at **NO EXTRA COST!**

Whoever you are, wherever you are...you, too, can probably show great savings by cutting the weight of your shipping container. It's hard to believe but true: a small reduction in gross shipping weight can often increase your shipping area almost 100% *at no extra cost!* Remember this, General engineered shipping containers are lightweight and extra strong. They are quickly and easily assembled. Result: substantial savings "all along the line." Your free copy of "The General Box" tells the complete story. *It is available upon request.*

General BOX COMPANY

engineered shipping containers

GENERAL OFFICES:

48 W. Illinois Street, Chicago 10, Illinois

DISTRICT OFFICES AND PLANTS: Cincinnati, Denville, N. J., Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, Sheboygan, Winchendon, Continental Box Company Inc., Houston, Dallas, General Box Company of Mississippi, Meridian, Miss.



General
Wirebound
Crate



General
Nailed
Box



General
Corrugated
Box



General
Cleated
Corrugated
Container



General
All-Bound
Box



Generallift
Pallet and
Pallet
Box



General
Watkins
Type
Box

Constructed to Take Severe Punishment

Without Tube Swelling



CONCORD #20 STEAM HOSE

Here's the steam hose with a structural difference that eliminates . . . once and for all . . . the common failure of tube swelling under continuous high pressure operation.

CONCORD #20 Steam Hose gives you the exclusive protection of a tough inner lining . . . a lining of stainless steel wire braid. This braid assures permanent retention of the original inside hose diameter. It prevents swelling and constriction of the tube . . . assures full flow of steam at all times . . . permits re-coupling in the field when necessary, without the slightest difficulty.

In addition, CONCORD #20 construction features include: two or three braids (depending on size) of alternate high tensile steel wire and rubber layers are firmly bonded over the outside of the tube. They provide maximum burst-protection and safety. An asbestos braid provides positive cover adhesion and serves as cover insulator. On top of all is the rugged, abrasion-resistant cover that withstands the severest abuse.

Flexible, tough and dependable . . . that's BWH's new CONCORD #20! Ask your nearby BWH distributor for a demonstration. Get in touch with him today, or write us direct.

Tube Securely Locked by Special Stainless Steel Inner Wire Braid!

Illustration above shows how exclusive inner stainless steel braid of CONCORD #20 Steam Hose prevents tube swelling and assures long life under severe use.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

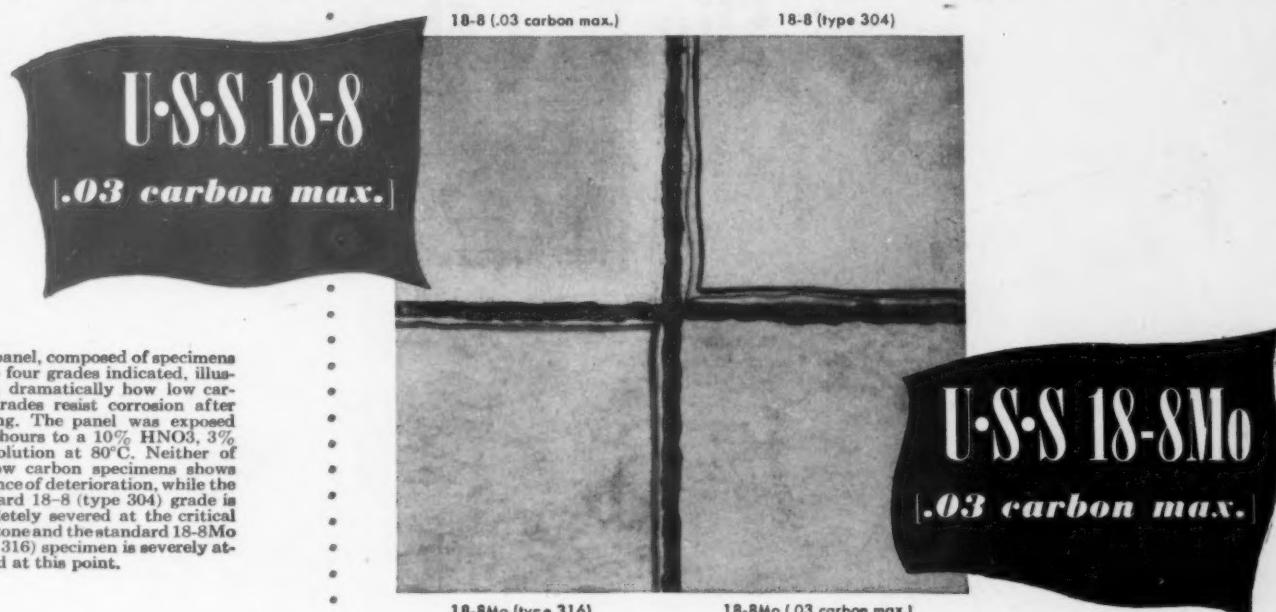
PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.



Two new extra-low carbon

U·S·S Stainless Steels

give high corrosion resistance after welding



This panel, composed of specimens of the four grades indicated, illustrates dramatically how low carbon grades resist corrosion after welding. The panel was exposed for 6 hours to 10% HNO₃, 3% HF solution at 80°C. Neither of the low carbon specimens shows evidence of deterioration, while the standard 18-8 (type 304) grade is completely severed at the critical weld zone and the standard 18-8Mo (type 316) specimen is severely attacked at this point.

Where to use these low-cost, low-carbon Stainless grades

Welded tubing
Smoke stacks and duct-work in chemical plants
Drawn shapes for welded assemblies
Hoods and ducts in paper and textile plants
Chemical extraction tanks
Sulfite digesters
Pickling tanks
Chemical polishing tanks
Bubble caps in distillation units

If you need a grade of Stainless Steel that must undergo exposure to exceptionally severe corrosive conditions after welding or hot forming, you'll find real savings in these two new grades of U·S·S Stainless Steel which contain a maximum of 0.03% carbon.

During exposure to sensitizing temperatures—800° to 1600°F.—some of the chromium in ordinary grades of Stainless combines with carbon to form chromium carbides, thus reducing corrosion resistance. Heretofore, fabricators have had to combat this by annealing the product or by the use of steel containing such stabilizing elements as columbium or titanium—both expensive operations.

Development of two new U·S·S Stainless Steels—U·S·S 18-8 [.03 carbon max.] and U·S·S 18-8 Mo [.03 carbon max.]—now makes the inconvenience of special treatment or the extra cost of stabilized grades in many

applications unnecessary. In these new grades, the carbon content has been drastically reduced, practically eliminating the problem of carbide precipitation with resultant intergranular corrosion.

Corrosion tests of welded joints have indicated that these new grades give resistance to intergranular corrosion adjacent to welds equal to the more expensive stabilized grades and far in excess of ordinary grades.

By replacing stabilized grades with low carbon grades, you can realize savings in material costs up to 10%. In many cases, stress-relieving of welded vessels can be accomplished at substantially lower temperatures.

Get all the facts on these two new U·S·S Stainless Steels by writing for a copy of our booklet. Send your request to United States Steel Corporation Subsidiaries, 2208 Carnegie Building, Pittsburgh 30, Pa.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND • CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH

COLUMBIA STEEL COMPANY, SAN FRANCISCO • NATIONAL TUBE COMPANY, PITTSBURGH • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM

UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U·S·S STAINLESS STEEL

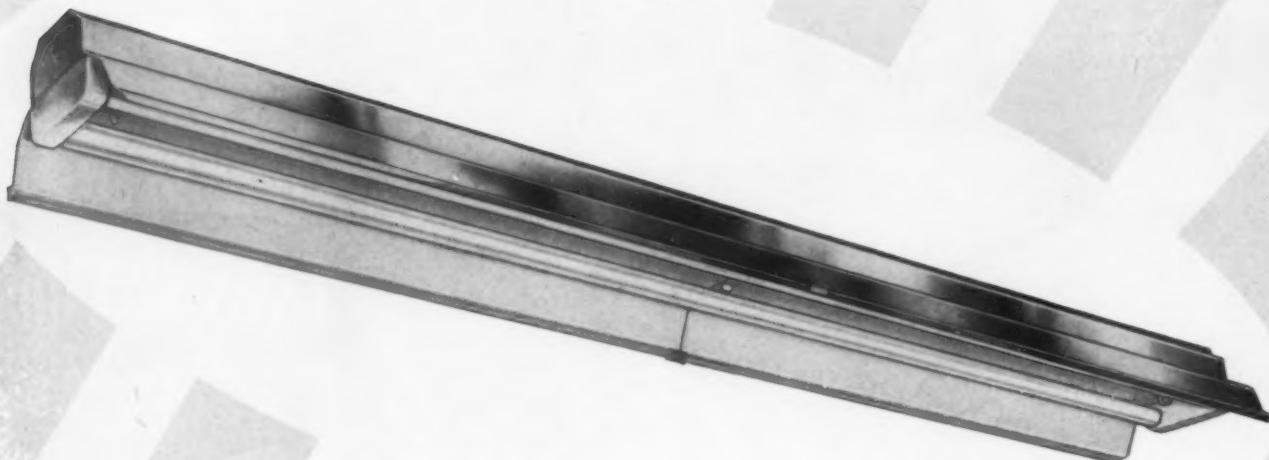
SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

0-1845

UNITED STATES STEEL

Modern as tomorrow!

New Wheeler RLM "Industri-Line" Slimline Fixtures



An outstanding, progressive step in Industrial Lighting! Wheeler Engineers have built into these newly-designed line of units 6 Better-Value Features. For greater value, greater efficiency, insist on Wheeler R.L.M. Slimline Fixtures!

- ★ High Output: gives more light per foot of lamp length.
- ★ Latest G. E. Turret Type Lampholders (depressable): for single pin contact, making lamp insertion and removal easy.
- ★ Reflectors in Sections: for greater ease in handling, each unit furnished with two open-end or closed-end porcelain enamel reflectors.
- ★ Individual or Continuous Mounting: extremely simple mounting operation.
- ★ One-piece Top Channels: made of heavy gauge steel. Finished in either porcelain enamel (recommended where excessive moisture conditions exist) or baked synthetic enamel.
- ★ Designed for use with two and three T-12 Slimline Single-Pin Lamps: Instant starting.

Get complete details from Wheeler Reflector Company,
275 Congress Street, Boston 10, Massachusetts.

wheeler

REFLECTORS

MADE BY SPECIALISTS IN

"SKILLED LIGHTING"

Distributed Exclusively
Through Electrical Wholesalers

EQUIPMENT SINCE 1881



Tony's **CONFIDENCE** Comes from Al's **ACCURACY**

Antonio Coputo assembles gasoline pump meters in the plant of Gilbert & Barker Mfg. Co.

Tony's employers have provided him with the best possible equipment to do his work well, speedily and with the least amount of effort.

He has a light, airy working place, a spring-suspended power driver, and RB&W cap screws—the cap screws he uses with confidence because they are uniformly accurate.

Such uniformity is one reason why so many of the country's most progressive firms depend on RB&W bolts, screws, nuts and rivets.



Alfred Robbins operates RB&W's latest wire-drawing equipment. He oversees a process which is vital to quality, for RB&W draws its own wire, using tungsten carbide dies, in order to insure closest tolerances for cold-heading.

By this and other means of controlling raw materials, men like Alfred Robbins insure the accurate dimensions of RB&W fasteners . . . so that men like Tony Coputo can work with perfect confidence in their fasteners.

For lowest fastening costs, select the brand of fastener that is *always dependable*—RB&W.

RB&W

The Complete
Quality Line

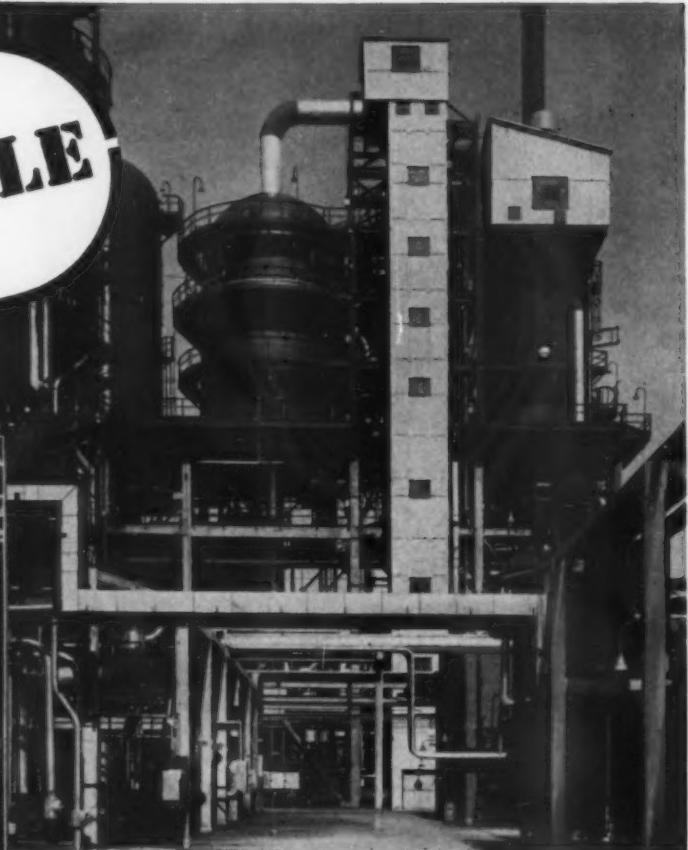
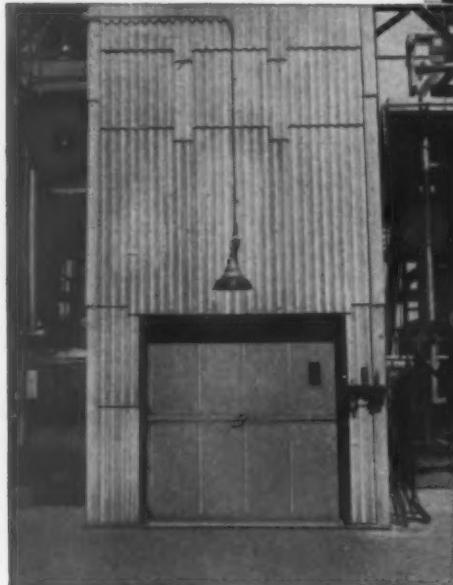
RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif.
Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga,
Oakland. Sales agents at: Portland, Seattle. Distributors from coast to coast.

105 Years Making Strong the Things That Make America Strong

K & M "Century" ASBESTOS CORRUGATED WALLS

NOT PERISHABLE



Mid-Continent Petroleum Corporation Refinery, West Tulsa, Oklahoma.

Elevator Tower and Penthouse protected by K&M "Century" Asbestos Corrugated, applied with "TOP-SIDE"® Fasteners.

Industrial and commercial building walls need a rugged constitution. That's exactly why K&M "Century" Asbestos Corrugated walls are bound to be an economy for you. They provide all the structural strength and staying power of the proved K&M Asbestos-Cement combination. They shed extremes of weather and other atmospheric threats, without even needing paint. They defy fire, rust, rot, rodents and termites. You can plainly add it all up to long-term freedom from maintenance.

Initial savings are just as plain, for K&M "Century" Asbestos Corrugated goes up fast, no special work needed. Fitting is easy with ordinary cutting and drilling tools. Even scaffolds and extra labor can be eliminated by using "TOP-SIDE"® fasteners. They're made so that K&M Corrugated can be anchored to steel members of any type, on sides or roofs. You'll have protective enclosure—and cost figures—that keep on looking good.

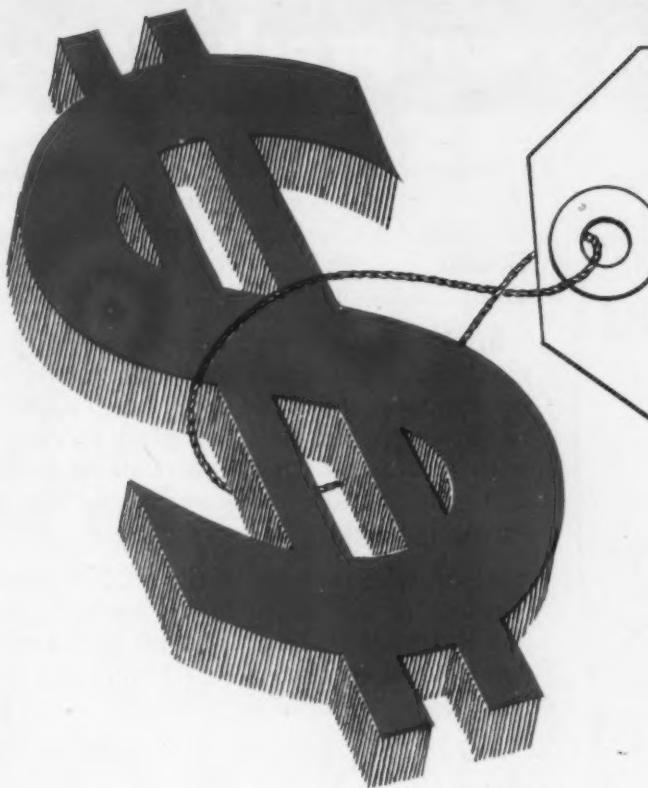
*Write for the name of your nearest K&M Distributor,
and full data on K&M "Century" Asbestos Corrugated.*

*® H. & B. Enterprise Corp.

Nature made Asbestos... Keasbey & Mattison has made it serve mankind since 1873

**KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA**





What price "price"?

BUYING a component part on the basis of price alone can be expensive. It doesn't take into account the three other vital features that determine the *value* of a part: (1) quality, (2) manufacturer's services, (3) public acceptance.

Singly or together, these three features far outweigh price in importance.

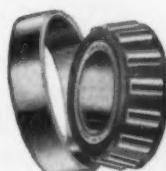
When it comes to tapered roller bearings, only Timken® gives you the most value. That's because Timken alone gives you the highest quality *plus* the most extensive service *plus* unequalled public acceptance (see "P. A. Notes").

We think you'll find this simple formula helpful in getting the most for the money you spend on *any* part:

$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

And remember, by this or any other formula, Timken is your best buy in tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

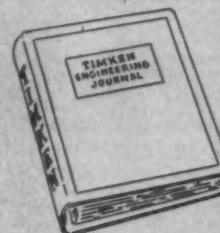


NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



P. A. Notes:

UP 25%! As a result of many improvements in quality, capacity ratings of Timken bearings were increased 25% some time ago. This made possible the use of smaller bearings, saves you money.



BEARING GUIDE. The new Timken engineering journal discusses 26 different types and 5850 sizes of tapered roller bearings to help your Engineering Department select exactly the right one for every application. It's the only one of its kind.

VOTE GETTER. An independent survey of top executives showed Timken's advertising got 88% of the vote for "most helpful" of all bearing ads. Worldwide acceptance, aided by advertising, is another sales-plus Timken bearings give your product.



If you use chain in your products . . .

ROUND will help you
manufacture
more economically...
*will boost
your sales!*



Proof Coil or BBB Coil



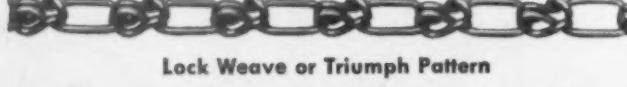
Liberty Coil—Twist Link



Liberty Coil—Straight Link



Liberty Machine—Twist Link



Lock Weave or Triumph Pattern



Buckeye or Brown Pattern

A-2753

Regardless of the type of chain you use in manufacturing your products . . . whether it's Proof Coil, Super Steel or Conveyor, Double Jack or Safety, or any of a hundred other kinds of chain . . . specify ROUND!

Six large plants with warehouses in principal cities guarantee that your needs will be met promptly and efficiently. ROUND chain engineers will be glad to consult with you and to make recommendations that will cut your costs and speed up your assembly work.

Also—when you specify ROUND CHAIN, you secure an "extra bonus" which gives you a decided sales advantage in today's competitive markets. This bonus is public confidence in the ROUND name.

ROUND has stood for top quality in chain since 1869. Your customers know the ROUND name. Their customers, in turn, know and trust it.

Manufacturers, who feature the ROUND name on their products and include it in their advertising and sales promotion, agree that it is a real aid to sales.

You, too, can benefit by this prestige, born of over 80 years of fine chain craftsmanship. Specify ROUND on every chain order.

A-2831



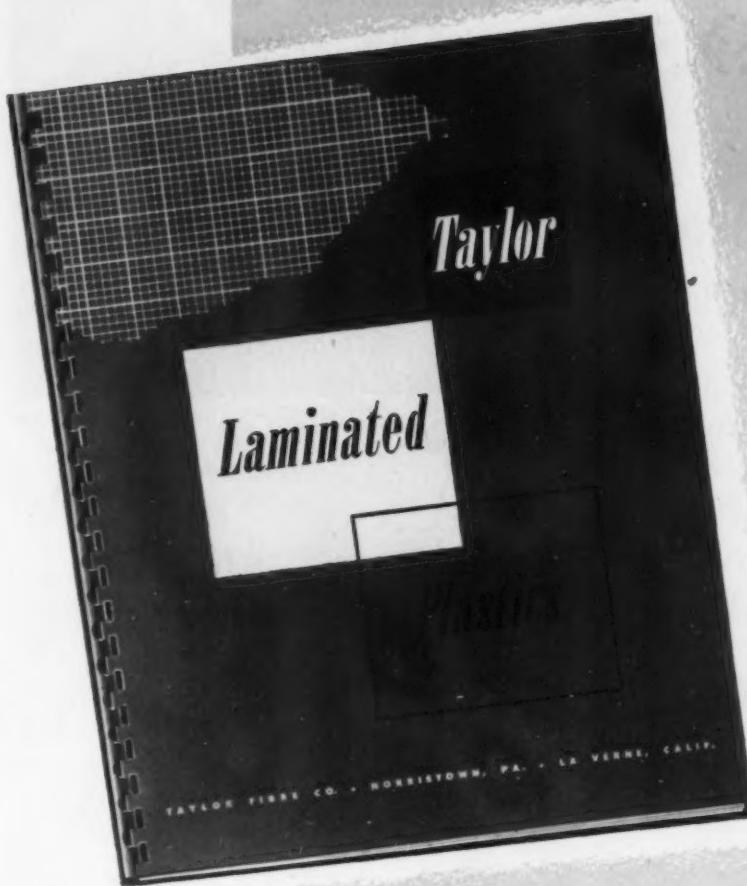
CLEVELAND CHAIN

The Cleveland Chain & Mfg. Co.

Cleveland 5, Ohio

ROUND Associate Chain Companies

The Bridgeport Chain & Mfg. Co., Bridgeport, Conn. • The Cleveland Chain & Mfg. Co., Cleveland, Ohio • Round California Chain Co., So. San Francisco and Los Angeles, Cal. • The Round Chain & Mfg. Co., Chicago, Ill. • Seattle Chain & Mfg. Co., Seattle, Wash. • The Southern Chain & Mfg. Co., Birmingham, Ala. • Woodhouse Chain Works, Trenton, N. J.



HERE'S HELP

FOR THE
PLASTICS
BUYER

It's the new Taylor Catalog... 48 fact-filled pages of descriptive and engineering data on Vulcanized Fibre, Phenol Fibre and Special Laminates. If you, as a purchasing executive, are looking for new ways and means to save money and improve your company's products, here's an invaluable guide guaranteed to spark your imagination and give you a hat full of hints, tips, and suggestions.

In this new Taylor Catalog you will find all the details you need to know about electrical, physical and chemical properties of sheets, tubes and rods. It tells you how to plan and buy for maximum

economy. It offers valuable tips and suggestions on how to select the right Taylor material for the job. It shows you how to machine these versatile materials... gives you weights, suggested applications... specifications.

And that's not all! There's a lot more information as well... tables, diagrams and technical data that you'll find of constant value.

This new Taylor Laminated Plastics Catalog should be in your files. For your free copy, just fill in the coupon below... mail it today... we'll do the rest!

Taylor

TAYLOR FIBRE CO.
NORRISTOWN, PENNSYLVANIA
WEST COAST FACTORY: LA VERNE, CALIF.

TAYLOR FIBRE CO., Dept. P 11
Norristown, Pa.

Send me my free copy of the new Taylor
Laminated Plastics Catalog

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

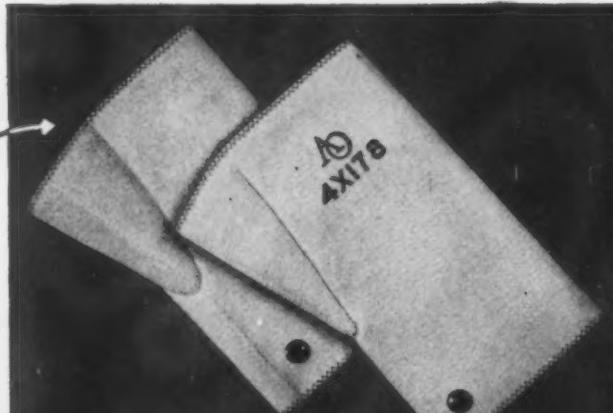
Here's DURATEX . . .

AO's Economical Heavy-Duty Protection Against Oil, Heat, Sparks, Abrasion

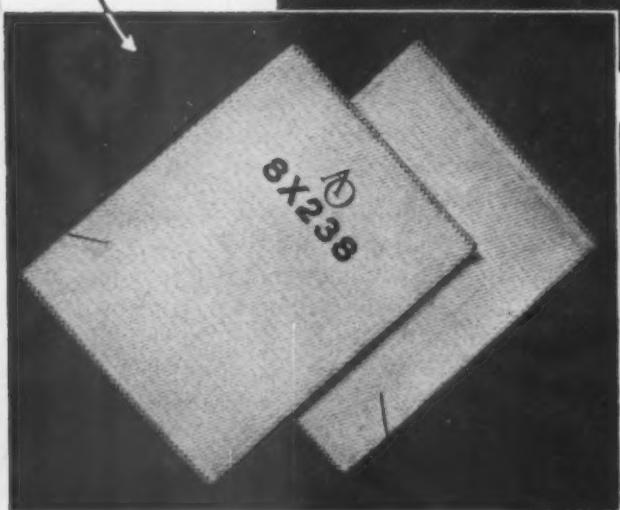
In one thrifitily-priced, long-wearing fabric — AO now offers 4-way protection for jobs where handling oily, greasy, abrasive or hot materials is a problem. While heavily woven to provide maximum protection, Duratex is remarkably flexible for working comfort! Your AO Safety Products Representative can supply you with this heavy-duty protection in mittens, hand pads, sleevelets.



NEW! 4X718 SLEEVELET
(10½" long—has snap button
adjustment at wrist)



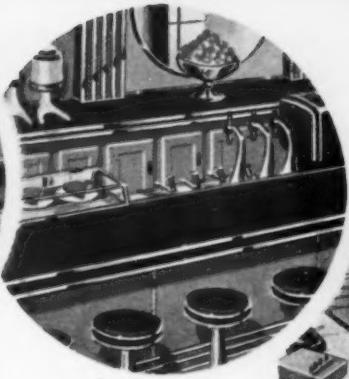
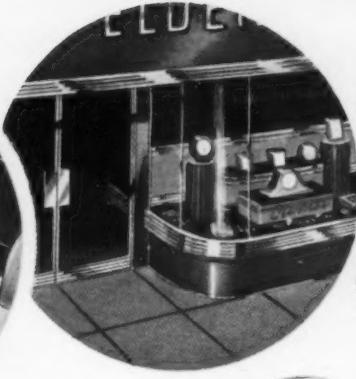
NEW! 6X238 REVERSIBLE
HAND PAD (7" long)



American Optical
COMPANY
SAFETY PRODUCTS DIVISION

NEW! AO 6X259 RE-
VERSIBLE OPEN END
MITTEN (8" long) also avail-
able as 6X260 (9½" long)

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



stainless
mouldings

- are everbright
- can't peel or discolor • are solid,
- strong and tough!

stainless mouldings fabricate better, deliver maximum consumer benefit, when you choose and use precision-made

Superior STAINLESS STRIP STEEL

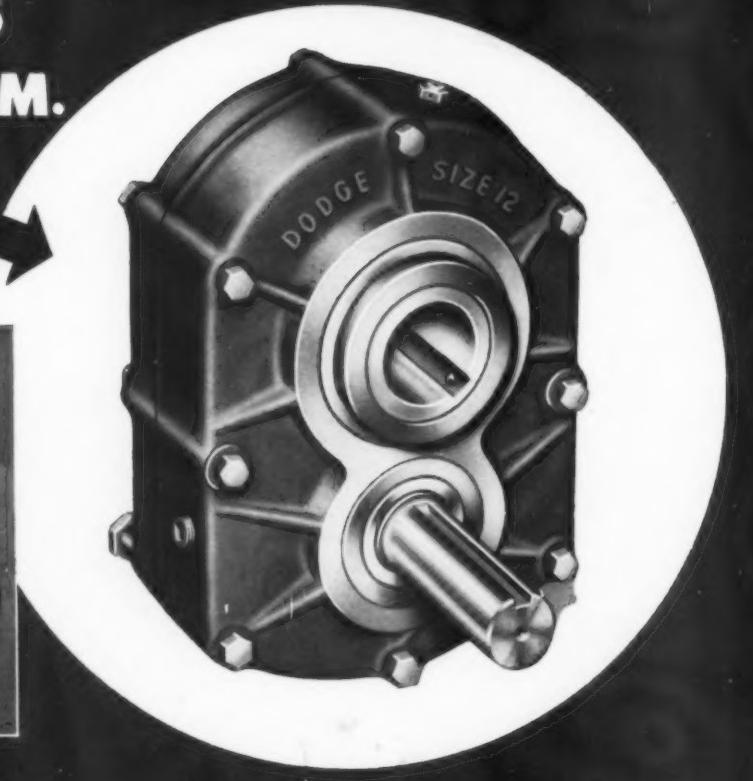
Because SUPERIOR Stainless Strip Steel handles more easily in mouldings manufacture, you enjoy an extra advantage . . . and easier handling is a built-in factor because we have the specialist's know-how. We produce only strip steels . . . to strictly-maintained standards of quality and precision in every grade, temper, dimension and finish . . . SUPERIOR through and through!

Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

NEW!

A TORQUE-ARM SPEED REDUCER

FOR SPEEDS 115 to 330 R.P.M.



A SINGLE REDUCTION SHAFT-MOUNTED SPEED REDUCER now offered by Dodge provides a wholly new opportunity for important savings on drive reduction where requirements for output speeds range from 115 to 330 r.p.m.

This new SINGLE Reduction Torque-Arm Speed Reducer provides the same big advantages in this range that its companion, the Dodge Double Reduction Torque-Arm, has brought to the field of lower speeds. Practical and economical. Easier to install and much more flexible in its application than floor mounted reducers. This new Dodge Single Reduction Torque-Arm can be delivered right from your Distributor's stock. Simply give him your horsepower requirement, the desired speed and size of the shaft to be driven, and he will furnish this complete speed reducer package to fit your job accurately.

Write us for Bulletin A602 with full details.

★ Four sizes...all available from stock with stock product economy...with capacities up to 27 H.P. and developing output speeds from 115 to 330 r.p.m.

★ Torque-Arm, fastened to floor or any fixed object, anchors reducer unit. Turnbuckle provides fast, accurate adjustment of belt tension.

★ No special engineering required. No foundation to provide. No flexible couplings or sliding base. No "lining-up" difficulties. Unit is driven through any V-Belt Drive.

DODGE MANUFACTURING CORPORATION
1300 Union Street, Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

AMERICA'S MOST COMPLETE LINE OF SHAFT-MOUNTED SPEED REDUCERS

DOUBLE REDUCTION
CAPACITIES TO 25 H.P.

OUTPUT SPEEDS
12 TO 110 R.P.M.



SINGLE REDUCTION
CAPACITIES TO 27 H.P.

OUTPUT SPEEDS
115 TO 330 R.P.M.



Creative Package Engineering



this corrugated "shock-proof" shipping box

Supports its contents... excludes foreign materials... resists abrasion... cushions delicate assemblies... braces... provides clearance for all parts... shields surface from scratching, chipping... pads corners... protects product throughout. For perfect protection for any product at lowest possible cost consult Hinde & Dauch, Executive Offices, 5006 Decatur St., Sandusky, Ohio.

H&D®

HINDE & DAUCH
Authority on Packaging

"Behind The Scenes at the Package Laboratory." Discover how packaging bottlenecks are broken, waste eliminated, costs cut, sales stepped up through intelligent packaging. Write for your copy.



FACTORIES AND SALES OFFICES IN: Baltimore • Buffalo • Chicago • Cleveland • Detroit • Gloucester, N. J. • Hoboken, N. J. • Kansas City, Kan. • Lenoir, N. C. • Richmond, Va. • Sandusky, Ohio
St. Louis • Watertown, Mass. SALES OFFICES IN: Akron • Battle Creek • Cincinnati • Columbus • Denver • Erie, Pa. • Fairfield, Conn. • Findlay, Ohio • Greensboro, N. C. • Indianapolis • Miami
Minneapolis • Cleve, N. Y. • Omaha • Philadelphia • Pittsburgh • Reading, Pa. • Roanoke, Va. • Rochester • Toledo • Worcester, Mass. IN CANADA, HINDE & DAUCH PAPER CO. OF CANADA, LTD.
Toronto • Montreal • Chatham • Calgary • Halifax • Hamilton • Kitchener • London • Peterborough • Quebec • Regina • St. John, N. B. • St. John's, Newfoundland • Vancouver • Winnipeg

Many Grades, of ONE PLASTIC ALONE, are your Assurance of

Which of these Dilecto Grades Can Meet Your Requirements?

ELECTRICAL AND MECHANICAL PROPERTIES OF DILECTO SHEET GRADES, APPROXIMATE AVERAGE VALUES

NEMA Grade	Continental Diamond Grade (sheets) DILECTO	Lbs./cu. in.	Specific Gravity	Water Absorption %, 24 hrs.	Rockwell Hardness "M"	Tensile Strength Thousands of psi	Flexural Strength Thousands of psi	Compression Strength, thousands psi (lb./in.)	(1) Impact Strength (Izod) Notched in ft. lbs. per 1" of Notch				Dielectric Strength in Volts per Mil	(2) Power Factor 10^6 cycles/seconds		Dielectric Constant 10^6 cycles/seconds		Loss Factor 10^6 cycles/seconds		Bilstering Temp. °C.				
									Bonding Strength, lbs. (1)		Step by Step			As Recd.		Wet		As Recd.						
									LW	CW	LW	CW		LW	CW	LW	CW	LW	CW					
X	X-13	.0497	1.38	2.0	110	15	12	30	22	42	1100	3.5	2.0	0.70	0.60	750	530	0.039	5.10	0.80	220			
P	XP-13	.0497	1.38	1.5	100	11	10	20	16	26	900			0.60	0.50	575	400	0.036	0.04	4.6	5.2	0.17	211	
	XP-90	.0476	1.31	2.5	45	9.7	7.2	12	10	19				1.00	0.70	600	400	0.055	5.5	0.30	240			
XXP	XXP-13	.0497	1.38	0.9	110	10	8	17	14	27	1000			0.50	0.45	750	530	0.030	0.034	4.3	4.5	0.19	215	
XXXP	XXXP-13	.0497	1.38	0.5	110	9	7.5	16	13	27	1100			0.40	0.35	700	500	0.016	0.028	4.2	4.4	0.11	220	
	XXXP-22	.0466	1.29	0.3	115	12	10.5	13.5	12	27.5				0.379	0.338	810	675	0.024	0.027	4.08	4.2	0.10	240	
XXS	.0497	1.38	1.5	100	12	10	19	17	34	950	1.1	1.0	0.50	0.45	700	500	0.038	0.039	5.2	5.4	0.20	233		
XX	XX-13	.0497	1.38	0.9	110	12	10	19	17	34	950	1.1	1.0	0.50	0.45	700	500	0.038	0.039	5.2	5.3	0.20	250	
XXX	XXX-13	.0497	1.38	0.7	115	11	10	19	16	36	1200	0.9	0.85	0.45	0.40	650	470	0.034	0.035	4.8	4.9	0.16	240	
	XXARC	.0497	1.38	3.0	100																			
	XXHV	.0497	1.38	1.3	110	10	8	17	15	27	950					600	450	0.033	0.039	4.7	4.8	0.16	219	
	CBW	.0497	1.38	1.9	100	12	10	19	18															
A	A-13	.0614	1.70	0.8	100	10	7	18	16	38	900	1.9	1.8	0.9	0.8	200	120	0.115	5.2	0.60	220			
AA	AA-13	.0560	1.55	0.7	110	10	6.5	19	15	40	1800	5.0	4.1	4.5	4.0	75	45	0.44	6.8	2.99	270+			
	MAA	.0639	1.77	5.3	108	7.4	6.5	13	12	45	1300	6.0		4.0		35	27	0.57	13.4	7.7	300+			
	FA-72	.0578	1.60	0.7	115	21	17	38	27	48	1400	5.0	4.0	2.5	2.0	70	50				230			
	MA	.0650	1.80	1.2	115	10	6	17	13	40	900	1.3	1.1	0.85	0.75	150	80	0.11	8.2	0.90				
	CF	.0497	1.38	0.8	100	11.5	9.5	22	22	38.5					2.0	1.6	200	125				200		
C	C-813°	.0497	1.38	1.0	110	11	9	21	19	40	2000	3.6	3.5	2.4	2.1	200	120	0.065	6.0	0.36	230			
	MC	.0524	1.45	3.0	107	9.5	7.9	17	16.6	39					1.4		300	200	0.07	0.17	8.4	15.5	0.59	215
	CV	.0497	1.38	0.8	115	9	8	20	18	40	2200	2.4	2.3	1.5	1.4								240	
CE	CE-800	.0497	1.38	0.8	115	9	8	20	18	38	2200	2.4	2.3	1.5	1.4	380	265	0.050	0.058	5.2	5.6	0.26	240	
L	L-400°	.0497	1.38	0.9	110	12	9.5	23	18	39	1900	3.3	3.0	1.4	1.3	200	120	0.065	0.072	6.0	6.3	0.39	210	
	ML	.0524	1.45	2.0	110	13.5	9.1	22	15	39					0.7		325	230	0.07	0.20	8.4	8.95	0.59	1.79
LE	LE-13	.0497	1.38	0.7	115	10	8	21	17	40	2000	2.5	2.0	1.5	1.1	450	290	0.045	0.050	4.8	5.2	0.22	230	
	LDC	.0497	1.38	0.6	115	9	7.5	20	16	40	2000	2.5	2.0	1.5	1.1									
	GB-112-M†	.061	1.69	3.0	114	22	20			45							600	400	0.018	7.0	0.126	270+		
	GB-112-D†	.060	1.65	2.5	110	33	30			38							900	700	0.018	5.0	0.090	270+		
G5	GB-128-M	.0686	1.90	2.2	110	25	22	40	38	50	1700	17.5	16.5	14.0	13.0	500	330	0.013	7.2	0.094	270+			
G3	GB-128-D	.0578	1.60	0.6	95	24	15	21	19	44	1500	10.0	7.0	8.0	7.0	600	390	0.025	0.04	4.9	5.3	0.13	210	
G1 & G2	GB-261-D	.0542	1.50	0.6	105	15	11	22	19	39	1800	9.0	5.5	8.0	5.0	425	360	0.011	0.02	4.2	4.3	0.046	0.06	
	Insulated Fibre	.0506	1.40	11.0	90	15	9	24	20	38	1000	7.0	5.5	1.5	1.4	600	390	0.055	0.080	6.0	6.5	0.33	0.52	
	MEC-5	.0423	1.17	0.2	100	6.7	5.7	11	9.5	48	850	5.5	4.0	3.0	2.0	370	340	0.016	4.43	0.071				
	GB-112-S	.0614	1.70	.15	19		27			31	960				7.2	5.5	325	300	0.002	0.013	3.9	4.6	0.008	0.060
	GB-128-S	.0614	1.70	.15	18		23			46	800				12	10	250		0.002	3.9	0.008	300+		
	GB-261-S	.0614	1.70	.20	22		24			990					9.5	8.0	150		0.002	3.9	0.008	300+		

NOTES: All tests, except "bilstering temperature," were conducted in accordance with American Society for Testing Materials Methods for Sheet Electrical Insulation.

*These Grades approximate the physical properties of Celoron.

†These grades are made principally in the thicknesses from .010" to .025". The data shown is for .025" thick sheet.

(1) Flatwise impact test and bonding strength values are based on 1/2"

thick material. All other tests are based on 1/8" thick material except the values for grade XXARC, which are based on 1/32" thickness.

(2) Wet power factor, dielectric constant, and loss factor values are based on samples which had been immersed in fresh water for 24 hours at $25^\circ \pm 2^\circ \text{ C}$.

(3) Insulation Resistance values were determined on samples conditioned for 96 hours at 90% $\pm 2\%$ relative humidity at $35^\circ \pm 1^\circ \text{ C}$.

...Plus these other high strength C-D Plastics with unusual combinations of electrical, mechanical, and chemical characteristics:

Vulcanized Fibre

Vulcoid

Celoron

Micabond

Spiral Tubing

Saves Time and Money by Receiving UNBIASED Materials Recommendations from C-D!

STANDARD SIZES OF DILECTO SHEETS . . . TUBES . . . RODS

Blistering Temp., °C.	Blistering Temp., °F.	Air Resistance, Insulation Resistance, Megohms (3)	Deformation under Load in %	Colors (4) and Finish (5)	SHEETS		TUBES						MOLDED RODS Lengths Approx. 36" to 46"	Continental-Diamond Grade (sheets) DILECTO		
					Thickness in Inches Inclusive	Approximate Size in Inches	MOLDED Lengths Approx. 18" to 144" (6)			ROLLED Lengths Approx. 18" to 96"						
							Min. (7) Wall Thickness, Inches	I. D. in Inches Inclusive	O. D. in Inches Inclusive	Min. (7) Wall Thickness, Inches	I. D. in Inches Inclusive	O. D. in Inches Inclusive				
220	428	10	90	Black, Natural, Nat. core with Black surfaces	.010—2	36 x 42 38 x 38 38 x 43 38 x 96 39 x 46 46 x 70	1/16	1/8—9	1/4—9 1/2	1/32 (6)	1/8—48	3/16—50	not made	X-13		
240	464	10	100	Black, Natural, Nat. core with Choc. surfaces	.010—1/4		not made			not made			not made	XP-13		
240	464	7	35	Natural	.010—1/4		not made			not made			not made	XP-90		
220	428		500	Blk., Nat. Choc., Nat. core with Brown surfaces	1/64—1/4		not made			not made			not made	XXP-13		
220	428	4	2000	Black, Natural	1/64—1/4		not made			not made			not made	XXXP-13		
240	464	9	9400	Natural	1/64—1/4		not made			not made			not made	XXXP-23		
250	482	4		Black only	1/32—2		not made			not made			not made	XXS		
250	482	4	500	Black, Natural	.010—2	38 x 38 and 38 x 43 sizes XXARC.	1/16	1/8—9	1/4—9 1/2	1/32 (6)	1/8—48	3/16—50	1/8—2 (9)	XX-13		
240	464	4	800	Black, Natural	1/64—2	38 x 38 and 38 x 43 sizes XXARC.	1/16	1/8—9	1/4—9 1/2	1/32 (6)	1/8—48	3/16—50	1/8—2 (9)	XXX-13		
	10	159		Olive Green	1/64—1/4		not made			not made			not made	XXARC		
	10	100		Black, Natural	1/64—2		not made			not made			not made	XXHV		
				White core, Blk. surfaces; alternating Blk. and White layer or Blk. surfaces	1/32—1/4	38 x 38	not made			not made			not made	CBW		
220	428	4		Natural	.025—2	38 x 38 and 38 x 43	1/16	3/16—9	5/16—9 1/2	1/16	3/16—48	5/16—50	1/4 to 2 (10)	A-13		
270+	518+	4			1/16—2	38 x 43 except Grade A	1/8	3/8—9	5/8—9 1/2	1/8	1—48	1—1/4—50	1/2 to 2	AA-13		
300+	572+	75	.25	Gray	1/16—2	36 x 38 and 36 x 43	1/8	3/8—9	5/8—9 1/2	1/8	1—48	1/4—50	1/2—2	MAA		
		4		Natural	.025—2	36 x 36	1/16	3/16—9	5/16—9 1/2	1/16	3/16—48	5/16—50	1/4 to 2 (9)	FA-72		
230	446	80	5	Gray	.025—2	36 x 36	1/16	3/16—9	5/16—9 1/2	1/16	3/16—48	5/16—48	1/4 to 2 (9) (10)	MA		
200	392	4	10	Natural	1/32—3/8	38 x 38 and 38 x 43	not made			not made			not made	CF		
230	446	4	25	Natural	.025—10	38 x 38 and 38 x 43	1/16	1/4—9	3/8—9 1/2	1/16	3/8—48	1/2—50	1/4 to 4	C-813*		
215	419	80	1.4	Gray	.025—2	38 x 43	1/16	1/4—9	3/8—9 1/2	1/16	3/8—48	1/2—50	1/4 to 4	MC		
240	464	4			1/32—2	36 x 42 and 38 x 38	not made			not made			not made	CV		
240	464	4	100	Black, Natural, except CV—Natural only	1/32—2	38 x 43	1/16	1/4—9	3/8—9 1/2	1/16	3/8—48	1/2—50	1/4—4	CE-800		
220	428	4	25	Natural	.010—2	38 x 96 and 39 x 46	1/32	1/8—9	3/16—9 1/2	1/32	3/16—48	1/4—50	3/16—4	L-400*		
95	9.7	1.4	Gray	.015—2										ML		
446	4	100		Black, Natural	.015—2	38 x 38 and 38 x 43	1/32	1/8—9	3/16—9 1/2	1/32	3/16—48	1/4—50	3/16—4	LE-13		
230	446	4		Natural	.015—2	38 x 38 and 38 x 43	1/32	1/8—9	3/16—9 1/2				3/16—4	LDC		
270+	185	50	0.90	Brown	.010—.025	38 x 38 and 38 x 43								GB-112-MI		
270+	4	20	0.50	Natural	.010—.025	38 x 38 and 38 x 43								GB-112-DT		
270+	518+	50		Brown	.015—2	38 x 38 and 38 x 43	1/16	1/4—9	3/8—9 1/2	1/16	1/2—48	5/8—50	1/2 to 2 (10)	GB-128-M		
270+	518+	4	25	Natural	.025—2	38 x 38 and 38 x 43	1/16	1/4—9	3/8—9 1/2	1/16	3/8—9	1/2—11	1/4 to 2	GB-128-D		
270+	518+	4	500	Natural	1/32—2	38 x 38 and 38 x 43	1/8	3/8—9	5/8—9 1/2	not made			1/2 to 2 (10)	GB-261-D		
150+	482+	100	10	Gray	1/32—2	39 x 46	1/16	1/2—9	5/8—9 1/2	1/16	1—48	1—1/8—50	not made	Black MI		
7	10000	1.13	Natural	.010—1	38 x 38 and 38 x 43	1/32	1/8—4	3/16—5	not made			3/16—8	MEC-5			
100+	572+	275	3000	Natural	.010—1/2	36 x 36 and 36 x 42								GB-112-S		
100+	572+	275	800	Natural	1/32—1/2	36 x 36 and 36 x 42								GB-128-S		
100+	572+	275	5.7	Natural	1/16—1/2	36 x 36 and 36 x 42								GB-261-S		

(4) Natural Color varies from golden yellow to dark brown.

(5) Standard finishes are dull, semi-gloss or polished.

(6) The above specifications cover standard sizes regularly in production. Where your design requirements dictate, and our production facilities permit, other sizes can usually be made on special order.

(7) Maximum wall thickness is determined by inside diameter. Correspondence is invited on sizes where wall thickness is abnormally great.

(8) Lengths over 40 inches are available in a limited range of sizes.

(9) Diameters of 1" and over may have annular cracks.

(10) 36" lengths.

DE-5-50

Drop us a line for the bulletin "5 High Strength Plastics". Just ask for GF-50.

Continental - Diamond FIBRE COMPANY

Established 1895.. Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE

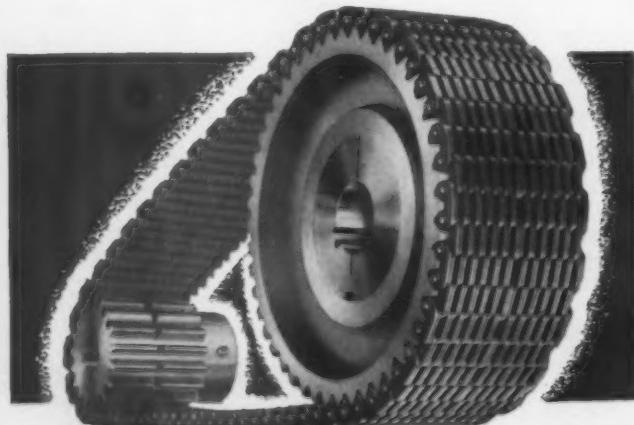
ALWAYS A GOOD FIRST STEP

to Sound Power Transmission . . .
**WHITNEY CHAIN DRIVES
AND FIELD SERVICE**

As a builder or user of machinery, you can take a long step towards reducing your power transmission costs by standardizing on Whitney Silent Chain Drives.

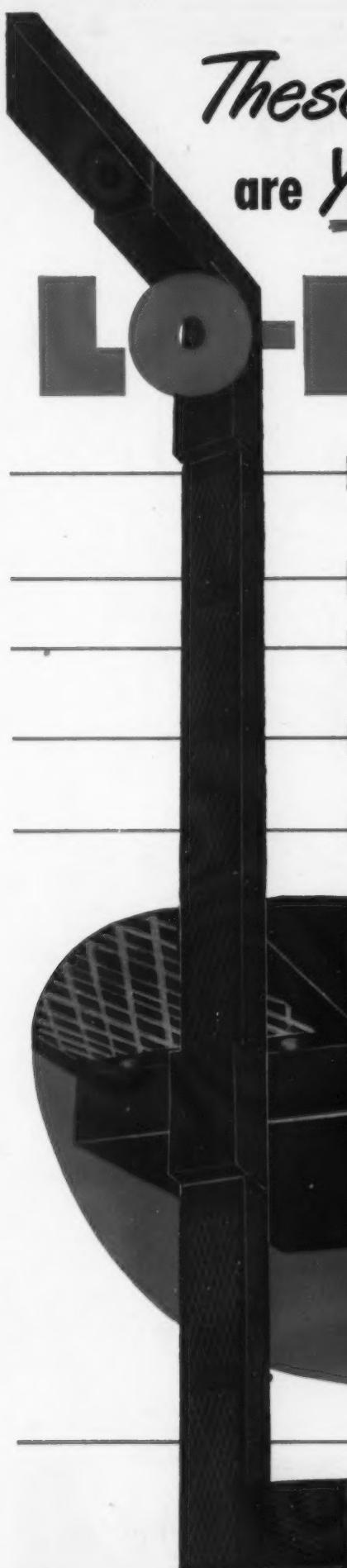
That's been the experience of many leading machinery designers and manufacturers. And they've learned that these outstanding drives contribute to product reputation through real service performance.

Here's why . . . deeply seated in sprocket teeth Whitney Chains transmit full-rated horsepower without friction or slippage. This gives you constant machine output . . . highest transmission efficiency. Their versatility and adaptability simplifies design. They operate on short or long centers, drive shafts clockwise or counter-clockwise, separately or simultaneously. In addition, Whitney's 50 years of specializing in the building of quality chain drives, guarantees the utmost in drive life with minimum maintenance.



PLUS WHITNEY SERVICE—And remember, Whitney Chain Drives . . . roller, silent, conveying chains, and cut-tooth sprockets . . . are carried in stock by a nation-wide network of more than 130 Whitney distributors. This fast local service saves you time, assures prompt delivery of your chain drive requirements . . . means that you are served more readily. In addition, 15 Whitney field offices, strategically located throughout the country, are at your service to help you solve your power transmission problems. For specialized chain engineering assistance consult your nearest Whitney field offices or write for catalog:

WHITNEY
Chain Drives
WHITNEY CHAIN COMPANY
207 HAMILTON STREET, HARTFORD 2, CONNECTICUT



*These Money-Saving Features
are Yours with NATIONAL ELECTRIC*

LO-LOSS FEEDER BUS

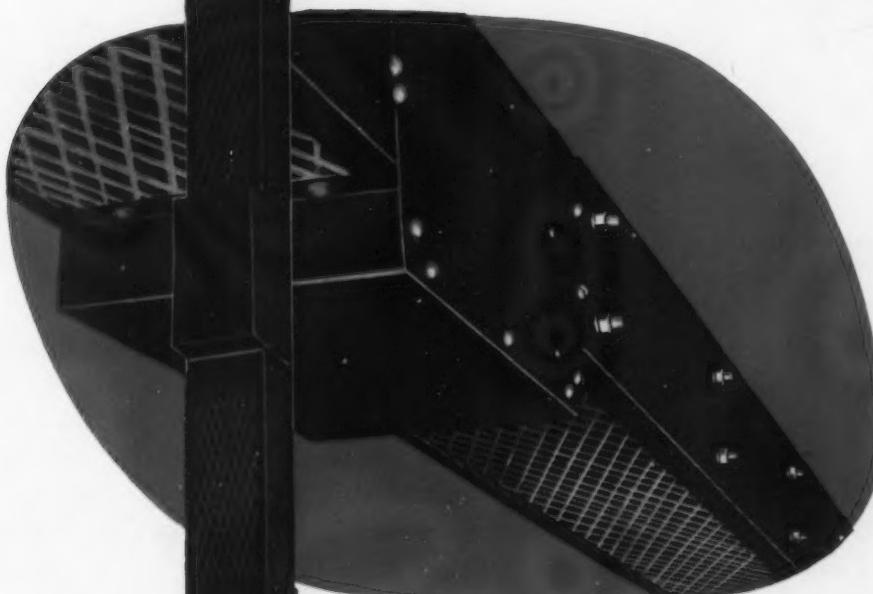
→ 1 Fits into Riser Bus applications because of the light weight to be supported, the small amount of space occupied and ease of installation. Underwriters' approved for vertical risers.

→ 2 Branch circuit take-offs can be made at various floors.

→ 3 Insulated copper bars on close centers result in minimum voltage drop and high efficiency.

→ 4 Factory fabricated sections to meet job requirements save time in making the installation.

→ 5 Flexibility eliminates separate branch circuits and long conduit and cable runs from main switchboard.



Designed for transmission of electric current up to 4000 amperes at 600 volts or less.

NE Busway is the most economical, convenient, flexible and salvable layout possible for commercial and industrial installations. Send for information today.

EVERYTHING IN WIRING POINTS TO

National Electric
PRODUCTS CORPORATION
1351 Chamber of Commerce Building, Pittsburgh 19, Pa.



MicroRold® 430 polished sheets now available



During the current critical nickel shortage, the same close tolerance and uniformity of gauge that have made MicroRold 18-8 so outstanding are now being incorporated in MicroRold 430.

It is important that the individual end use be discussed with your distributor or with our metallurgical department.

MicroRold 430 has moderate ductility, good forming and bending characteristics, and can be drawn to a *moderate* degree. It can be brazed and

soldered with the same facility as chrome-nickel grades and except where resistance to high stresses is a major factor, it welds satisfactorily by the usual methods.

MicroRold 430 is used extensively for interior architectural trim, bar, restaurant and soda fountain components, table tops, etc. Washington Steel Corp. is currently producing polished sheets in standard sizes, 20 gauge and lighter, to replace chrome-nickel material vitally needed for the national defense program.

WASHINGTON STEEL CORPORATION

Washington, Pennsylvania



Economy Packages



PILLOW BLOCKS
Light Series

Typical Fafnir "packaged" ball bearing units.



PILLOW BLOCKS
Medium and Heavy Series



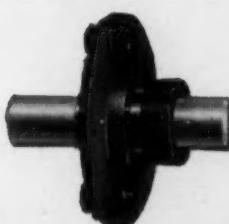
CARTRIDGES
Light and Heavy Series



PILLOW BLOCKS
Fixed and Floating Types



RUBBER UNITS



FLANGETTE

If you make machinery or equipment you know the magic selling-power of a tag on your product saying "Ball Bearing Equipped". . . . Much as you would like to add the selling plus of ball bearings to your own product it is not always a simple matter to change over from less efficient bearings. . . . Fafnir has gone a long way to help you gain these advantages by "packaging" ball bearings in complete units, including housings, seals and shields, in shapes and sizes to fit an amazing variety of machines and equipment and to function properly under all types of operating conditions. . . . A few minutes spent with a Fafnir engineer may bring forth an Economy Package which gives you all the advantages of ball bearings at minimum cost. The Fafnir Bearing Company, New Britain, Conn.

FAFNIR
BALL BEARINGS

MOST COMPLETE LINE IN AMERICA

ATKINS



PRODUCTS

WISH YOU ALL A

Merry Christmas
AND A
Happy New Year!

E.C. ATKINS AND COMPANY
INDIANAPOLIS INDIANA

MICRO SWITCH ENGINEERING



is geared to "tough application" problems!



Development of jet propelled aircraft has created new problems and placed new demands on materials and component parts.

Engineers of McDonnell Aircraft, St. Louis, called on MICRO SWITCH ENGINEERING, long experienced in solving aircraft switch problems, to help them meet the stringent switch requirements for the Banshee jet-propelled Navy fighter.

MICRO SWITCH designed new dependable precision switches for control of the wing-lock mechanism as well as switches to meet other exacting requirements. The long-continued efficient operation of these MICRO products is a matter of record.

You probably don't build jet planes, but, if the product you do make requires precision snap-action switches, you and your design engineers should know about MICRO SWITCH ENGINEERING—the service responsible for creating more than 4600 different switches for almost countless industrial applications. For details, call or write MICRO SWITCH, Freeport, Illinois, or any of the branch offices listed.



BRANCH OFFICES:

Chicago • New York • Boston • Cleveland
Los Angeles • Chattanooga

SALES REPRESENTATIVES:

Portland • St. Louis • Dallas • Toronto

MICRO... first name in precision switches

SUPERSTRONGS ARE SUPER STRONG



WIREBOUND BOXES and CRATES
WOODEN BOXES and CRATES
CORRUGATED FIBRE BOXES
BEVERAGE CASES
STARCH TRAYS
PALLET

Nearly a century of experience has resulted in the design and construction of shipping containers which give maximum strength and protection.

SUPERSTRONG boxes and crates - wire-bound, wooden and corrugated - incorporate special features which provide increased efficiency and protection at a reduced overall cost.

Your product will receive individual attention, so that a **SUPERSTRONG** container may be custom built to its particular specifications. A **SUPERSTRONG** representative will call when you request to make a thorough analysis of your shipping requirements.

RATHBORNE, HAIR AND RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

JUST SAY

OIC

FOR



For any valving requirement, you can specify OIC Valves and be sure of efficient, precise control. That's because OIC Valves are:

PRECISION ENGINEERED—positive closure . . . minimum friction . . . designed for smooth, free flow of air, gases and liquids.

PRECISION BUILT—every essential part accurately finished for a precise fit, on the most modern production equipment.

PRECISION APPLIED—OIC engineers always available to help you select valves best suited to each job, at lowest cost.

Here's a three-way combination that provides "*precision valve*" equipment in your plant. First costs and upkeep costs are lower. See your local OIC distributor, or write us direct. Ask for a free copy of the 1950 OIC Valve Cross-Reference Chart. The Ohio Injector Company, Wadsworth, Ohio.



VALVES
FORGED AND CAST STEEL • IRON • BRONZE





GET THE MOST for your motor money

Get G-E Motors via Graybar

On any power-drive order, to get the most for your motor dollar every time, specify G-E motors via Graybar. Graybar distributes a wide line of G-E motors — the motors that both plant and product engineers accept without question for any installation. AC or DC, general- or special-purpose — dependable G-E motors deliver the power you want, smoothly and steadily, for long periods without maintenance.

All the Right Controls

To keep your G-E motors "under control", team them up with G-E starters. In addition to full protection against injurious overloads, they have other security built-in. All live parts are completely enclosed... contacts and other operating parts have long-life features. Cases have ample conduit knock-outs and terminals for easy installation. Graybar also distributes all of the necessary wire, conduit, and accessories you need for your motor installations.

"Powerful" help on all power needs

Throughout the nation at 19 of Graybar's 105 offices, there are Power Apparatus Specialists who are highly experienced in the selection and application of motors and controls for specific tasks. The nearest Graybar Specialist is ready to help you or your electrical contractor plan the best use of all kinds of power equipment—including transformers, switchgear, circuit breakers, capacitors, and other items for intra-plant distribution. Altogether, Graybar distributes more than 100,000 electrical items. For dependable supplies . . . for help in speeding your lighting, communication, ventilation, and other electrical installations, call our nearest office. *Graybar Electric Company, Inc.* Executive offices: Graybar Building, New York 17, N. Y.

FREE—two booklets on Controls

GRAYBAR ELECTRIC COMPANY, INC.

5075-B

420 Lexington Avenue, New York 17, N. Y.

Please send me free copies of the two booklets, "Simplified Guide to the Selection and Application of Commonly Used Types of A-C Motor Controls" and "The Biggest Control Story in Years."

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

You get the best of
everything electrical
Via Graybar

PURCHASING

The National Magazine of Industrial Procurement

VOL. 29, No. 6

DECEMBER, 1950

STUART F. HEINRITZEDITOR

B. P. MASTChairman of the Board
 HARVEY CONOVERPresident and Treasurer
 A. M. MORSE, JR.Vice President and Manager
 A. H. DIXVice President, Research
 GILBERT B. FERRISSecretary

EDITORIAL STAFF

GEORGE E. HENRYAssociate Editor
 PAUL V. FARRELLAssociate Editor
 A. N. WECKSLERWashington Editor
 L. E. McMAHONProduction Manager
 E. C. ARINKArt Director
 DAVID BURKEAssociate Art Director

ADVERTISING REPRESENTATIVES

ALEX G. GRAAMNew York
 RAY RICHARDSNew York
 C. R. KINGSLEYNew York
 WAYNE W. GEYERChicago
 H. L. PELOTTChicago
 RICHARD C. GROVECleveland Manager
 FORREST C. PEARSONWest Coast Manager
 EDWARD M. BUCKSouthern Representative

EDITORIAL AND EXECUTIVE OFFICES
 205 East 42nd Street, New York 17, N. Y.

BRANCH OFFICES

737 NORTH MICHIGAN AVENUEChicago 11, Ill.
 435 LEADER BUILDINGCleveland 14, Ohio
 5478 WILSHIRE BLVD.Los Angeles 36, Calif.
 4552 REHIMS PLACEDallas 5, Texas
 NATIONAL PRESS BUILDINGWashington, D. C.

Published monthly by Peesye, Inc.
 Subsidiary of
CONOVER-MAST PUBLICATIONS, INC.
 Printed at Orange, Conn.

CONOVER-MAST PUBLICATIONS

PURCHASING
 AVIATION ACK
 MILL & FACTORY
 CONOVER-MAST PURCHASING DIRECTORY
 LIQUOR STORE AND DISPENSER
 CONSTRUCTION EQUIPMENT

PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent". Consolidated with "The Executive Purchaser".

Contents are indexed monthly and annually by the Engineering Index Service.

Subscription rates: United States, U. S. Possessions, and Canada: \$4 per year; elsewhere: \$6 per year. Single copies, 50¢.



DECEMBER, 1950

Inventories—Barometer or Cause?	69
Sell the Salesman!	S. E. Ringheim 73
Forward Looking Purchasing	S. F. Heinritz 74
You Can't Buy Safety	P. V. Farrell 76
PURCHASING Reports on Purchasing Opinion	
What Should Be Industry's Expansion Policy?	79
Personnel for Profits	B. D. Henderson 81
Coal Industry Views Its Lost Markets	A. W. Williams 83
Developing an Engineering Contract	E. S. Page 87
Commodity Round-Up	H. W. Ledebur, O. S. Wilson R. N. Betts, W. F. Jones 90
Purchasing at Pontiac	D. G. Baird 91
How to Buy Custom Built Parts	J. F. Wilkinson 96
How Standards Help the P. A.	W. S. MacLeod 98
Buying for Bigelow	G. J. Romieu 100
A Century of Purchasing Experience	103
Purchasing Policies for Today	E. B. Gallaher 104
Where We Stand Commodity and Business Trends	105
More Value for the Tax Dollar	113
Watch Your Warranties	Leo T. Parker 118
Color Television Featured at Business Show	164
MONTHLY FEATURES	
Purchasing Previews	13
Late Trade Bulletins and Catalogs	19
F. O. B.	30
Highlights	71
New Products — Ideas	128
Office Equipment and Supplies	163
Among the Associations	182
Personalities in the News	226
Letters to the Editor	300
Buyer's & Seller's Mart	302
Index to Advertisers	304

WRIGHT SAFETY SAFETY

*We have sacrificed absolutely nothing
to obtain this light portable hoist . . .*

21 Points of Superiority

1 A Rigger's Hoist—Light in weight, compact and rugged. Built to withstand wear and abuse as well as overloads. No protruding parts to snag on clothing.

2 A Fully Enclosed Hoist—Handwheel, load brake and load wheel protected from harmful foreign matter by means of heavy steel stampings.

3 Accessibility—Only a screw driver and a small adjustable wrench are required for repairing or dismantling.

4 Lead Chain—Chain is the heart of any chain hoist and we are proud of the quality that goes into every link. It is made in our own mills, the largest in the world, from materials selected and processed from billets to finished wire in our wire mill, guided by almost a half a century of experience with electric welding and controlled by engineers and metallurgists keenly abreast with the latest developments. With SAFETY uppermost among our objectives, we have developed a product combining maximum wear resistance with ability to withstand extreme impact.

5 Load Chain Guide shrouds load sheave. Effectively guides chain into load wheel and protects these parts from falling dust and dirt.

6 Load Wheel—Ferrous alloy, reversible and with accurately formed pockets. A spline fit to the alloy steel load wheel shaft which is supported on sealed precision ball bearings. Reverse when new chain is installed and you have a new

assembly.

7 Automatic Wick-type Lubricator for load chain and load wheel covers the links with a fine film of oil which is self-replenishing every time a link passes the wick. This high pressure oil film increases the life of the load chain tenfold.

8 Stripper—Fabricated steel.

9 Top Hook—Nickel-chrome-molybdenum alloy steel, drop-forged and heat-treated. Rocks and swivels; will open before fracturing.

10 Top Crosshead—Alloy steel, drop-forged and heat-treated. Rocks in steel straps which are projection-welded to hoist frames stronger than the hook they support.

11 Hoist frame—Two drawn steel sections of shock-resistant steel.

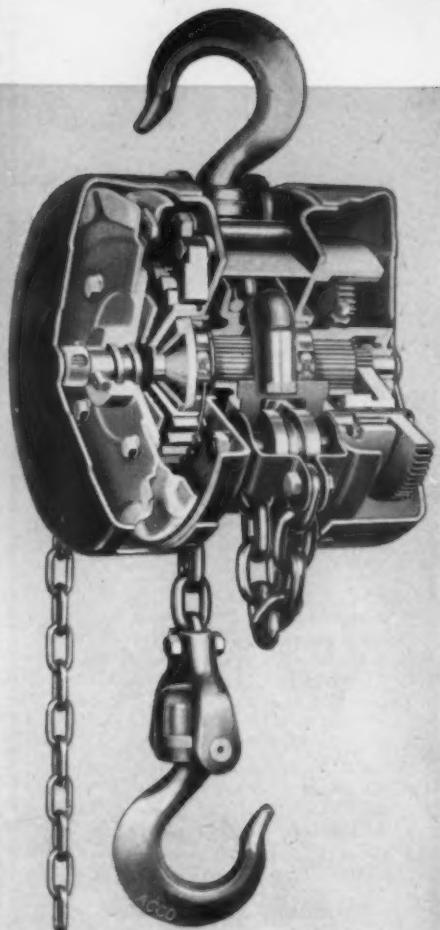
12 Driving Spindle—Nickel-chrome-molybdenum alloy steel. Machine-cut teeth. Operates on heavy-duty roller bearings. No cantilever loading.

13 Load Brake—Weston type with uniform composition lining and silent pawl. Effective whether hot or cold, wet or dusty.

14 Gear Train—Center planetary system using modified involute stub tooth form with all gear teeth generated from solid steel blanks.

15 Internal Gear—Nickel-chrome-molybdenum alloy steel with machine-cut teeth. Heat-treated and secured to frame by means of projection-welding.

16 Gears and Pinions—Nickel-chrome-



molybdenum alloy steel with machine-cut teeth. Heat-treated and mounted on heavy-duty roller bearings.

17 Gear and Pinion Shafts—Stationarily-mounted alloy steel, surface-hardened and ground.

18 Pinion Cage—Ferrous alloy, is a spline fit to the load wheel shaft.

19 Bottom Hook Coupling—Alloy steel, forged and heat-treated, permits easy replacement of load chain. Load carried on forging itself, not on bolt or pin. Stronger than the hook it supports.

20 Bottom Hook—Nickel-chrome-molybdenum alloy steel rocks and swivels. Operates on a Timken thrust bearing which is enclosed in a heavy pressed steel cover and lubricated for life. Has wide throat opening, will open before fracturing.

21 Lubrication—The gear train is enclosed in an oil-tight chamber. Those parts not lubricated for life are supplied from the central oil pool. The hoist should operate for years with no attention other than the replenishing of the oil in the wick oiler.

WRIGHT—"THE LINE WITH THE GOOD NAME"

ACCO

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia,
Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

**WRIGHT HOIST DIVISION
AMERICAN CHAIN & CABLE**

In Business for Your Safety

**HOISTS
TROLLEYS
CRANES**

INVENTORIES— BAROMETER OR CAUSE?

HERE has been a good deal of attention given recently to the subject of inventory policies and of actual physical inventories, and the available statistics have gained increasing use as one of the barometers of business activity and outlook. A study of manufacturers' inventories was released last month by the Bureau of Economic Research. Correlated with business fluctuations for the period between the two world wars, it is probably the first really comprehensive statistical investigation of the role played by inventory policies in actuating business changes. The conclusions drawn from this study indicate not only that inventories are a more important factor than has heretofore been suspected, but that the waves of accumulation and liquidation are a very potent cause of business instability.

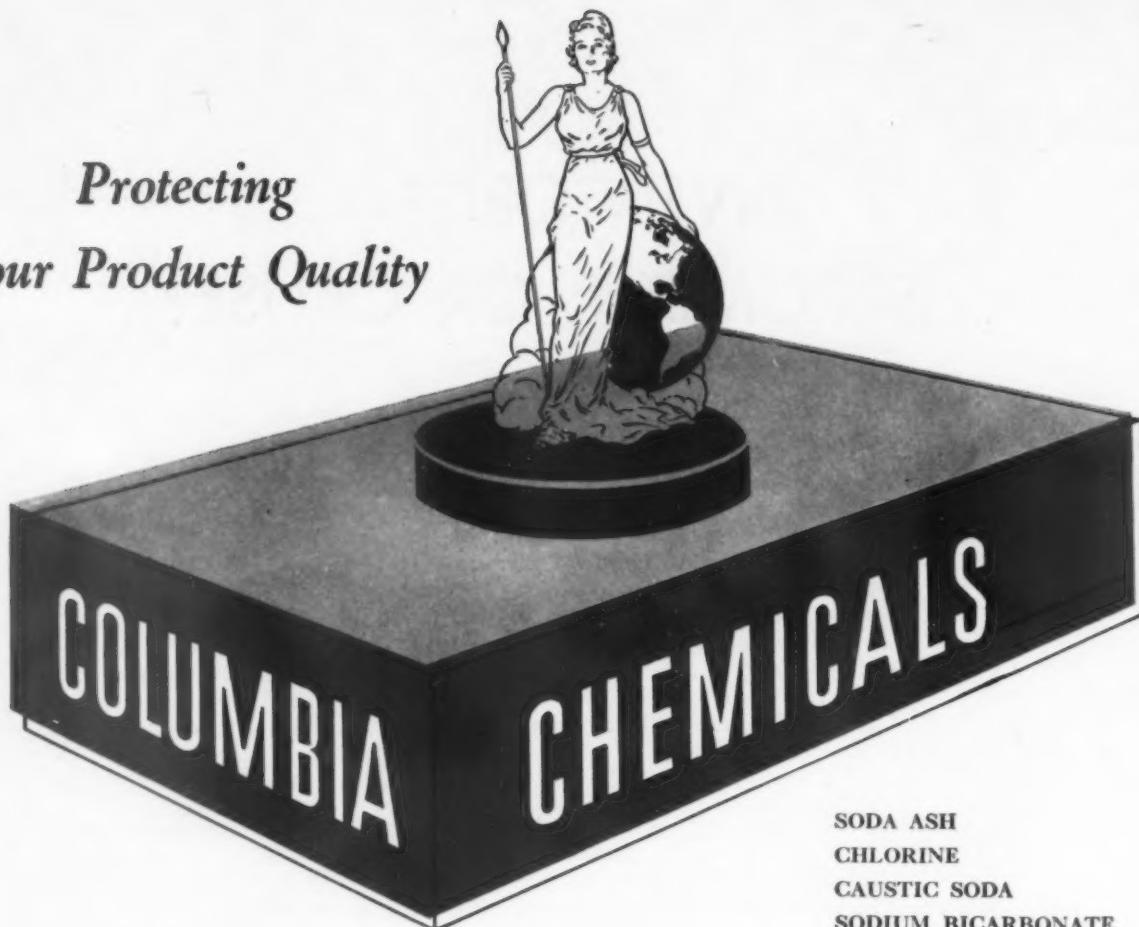
These conclusions come to many as a surprise, for the inventory reservoir is quite generally regarded as a stabilizing factor in the operation of a business enterprise, and there is a fairly stable relationship consistently maintained between the size of industrial inventories and the level of output—about 1 to 3. It is, in fact, this stable relationship that contributes most forcibly to the resulting business instability in the short cycle.

Between the two world wars, about 32% of the cyclical changes in total output took the form of changes in the volume of goods added to or removed from stocks. That's more than half again as much as the effect of expenditures for durable equipment, and four times as much as new construction, both of which have been widely cited as prime factors in business fluctuation. The effect of the "stable" inventory ratio has been to exaggerate the movements in either direction. It means that, on the average, for every dollar increase of sales there is a 1.3 dollar increase in production, and inventories mount rapidly; when the trend is in the other direction, the effect is even more pronounced, for not only is the inventory factor reduced but a considerable portion of the indicated production is taken from existing high inventories.

In the important but hazardous process of forecasting business and production for the purpose of inventory control, don't overlook or underestimate this vital factor. And don't forget that the inventory decisions based on your calculations may prove in themselves to react as the most potent factor of all.

Stuart F. Henrity

*Protecting
Your Product Quality*



When you use Columbia chemicals, you protect the quality of your products. A background of more than fifty years experience enables Columbia production technicians to employ controlled methods and supervision that assure chemicals which meet your most exacting standards.

The same thoughtfulness and care that go into the manufacture of Columbia chemicals also are carried on throughout packaging, shipping and delivery.

Skilled personnel, conveniently located plants, accurate attention to detail, and experienced technical assistance are other advantages favorable to Columbia customers.

Check with Columbia on your next chemical requirements. You'll find it pays in many ways. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield, Pittsburgh 13, Pennsylvania.

SODA ASH
CHLORINE
CAUSTIC SODA
SODIUM BICARBONATE
CALCIUM CHLORIDE
CAUSTIC ASH
MODIFIED SODAS
SODA BRIQUETTES
(Iron Desulphurizer)
PHOSFLAKE
(Bottle Washer)
SILENE EF
(Hydrated Calcium Silicate)
CALCENE T
(Precipitated Calcium Carbonate)
HI-SIL
(Hydrated Silica)
PACIFIC CRYSTALS
(Sodium Sesquicarbonate)
BORAX
PARA-DICHLOROBENZENE
ORTHO-DICHLOROBENZENE
MONO-CHLOROBENZENE
BENZENE HEXACHLORIDE
PERCHLORETHYLENE
MURIATIC ACID

COLUMBIA CHEMICALS



CHICAGO • MINNEAPOLIS • BOSTON
NEW YORK • CINCINNATI



ST. LOUIS • CHARLOTTE • PITTSBURGH
CLEVELAND • PHILADELPHIA

PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Highlights

This issue's important features
summarized for the busy reader



Fuel is a year-round problem for the industrial buyer, and it's also a problem of the future, involving long range decisions of policy and equipment. For many years it has been a matter of choice between coal and oil. Rapid growth of the natural gas industry and extension of gas pipe lines has made it a three-way problem in almost every section of the country. Today's decision may not look so good tomorrow. Watch for changes in comparative costs; watch statistics of depletion; particularly, watch for evidence of new reliability in short-term availability of coal, for the coal industry realizes that it has literally "struck" itself out in the competition for fuel markets. See article on page 83.

Purchase of **Custom Built Parts** presents a special problem for the buyer. Likewise, it presents a different sort of problem for the manufacturer, as compared with the production of a standard line. Satisfactory service depends on mutual recognition of this situation and working together toward its solution. The article on page 96 explains the manufacturer's requirements of information concerning details of design and use, and gives the reasons for his requests for worn samples, extra blueprints, and the like. Here are some practical hints that will help the buyer do a better job.

There's double value in E. S. Page's article on the development of **Engineering Contracts** (page 87). Not only does his outline provide a comprehensive summary of the steps and details to be covered in such a project. It explains and illustrates a technique of approach and handling this important responsibility that is equally applicable to many phases of purchasing work. You will find that the outline method of analyzing and organizing a purchasing project provides a guide that is complete, brief, and eminently useful, resulting in orderly and efficient purchasing work.

Many important national and regional **Purchasing Conferences** have been held during recent weeks, all over the country, making significant contributions to current thought and information on purchasing matters. Turn to page 113 for a report on the annual meeting of Governmental Buyers at Milwaukee. District conferences of N.A.P.A. groups are reported in the Association News section (page 182).

This month's **Guest Editorial** (page 73) is contributed by Stanley E. Ringheim, N.A.P.A. Vice President for District No. 1. Mr. Ringheim is one of those purchas-

ing executives whose early business training and experience was on the other side of the desk. Appropriately, he discusses the important attribute of salesmanship as it applies to purchasing work, advising fellow buyers to "Sell the Salesman!"

How Big should a purchasing department be? In a thoughtful and thought-provoking article (page 81) B. D. Henderson points out the dual nature of purchasing work—its service function and its profit-making opportunities. For the first part of this dual job, it is obvious that personnel should be kept at a minimum consistent with the work to be done. For the constructive and profit-making aspects of buying, high calibre personnel more than pays its way and shows a handsome return on the investment—and there are records to prove it.

Industrial Safety is more than a matter of equipment, warnings and good working conditions. It's a state of mind, in which management and worker see eye to eye and really put the principles of safe operation to practical use. Purchasing policies can be of substantial help in making safety policies effective throughout a plant. The article on page 76 tells how this is being worked out in one representative plant through cooperation between the safety engineer and the buyer.



Two successful **Purchasing Systems** are described in this issue, both of them having unique suggestions applicable to every purchasing operation. To see how "the other fellow" is meeting and solving purchasing problems, turn to pages 91 and 100.



Industrial Capacity is expanding. Is this expansion justified? Is it enough? What should the policy be? Turn to the survey report on page 79 and compare your views with those of your fellow buyers.

Do your purchase contracts provide **Adequate Guarantees** of satisfactory service? Leo Parker reviews the court decisions and warns, "Watch Your Warranties", (page 118).

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 163). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 128).

RYERSON STEELGRAMS



This bulletin is written to keep you abreast of the warehouse steel situation as we see it here at the Ryerson Company. We hope you will find this summary helpful in specifying, buying and working with steel.

If you have orders with DO Priority Ratings be sure to pass ratings along to your steel supplier. This will not only expedite delivery of steel but may also help warehouses maintain inventories against your future demands. Depleted warehouse stocks of 1942 emphasize importance of working for continuous replenishment.

New loan guarantees, recently announced by the Federal Reserve are helping many small manufacturers with defense contracts. Similar to World War II V-Loan program, the new set-up provides such manufacturers with easier access to working capital.

Despite restrictions on nickel, you will still be able to obtain alloy steel of comparable performance containing other alloying elements. As warehouse stocks of nickel alloys are depleted, triple alloys, which proved their worth in World War II, will take their place. Cost — slightly less.

A word about telephone service — A tremendous number of incoming calls is taxing the capacity of our personnel and switchboards, and even of whole exchanges that serve our plants. What we are doing about it: Improved facilities are now being installed or planned for where needed. Suggested emergency measures: early calls before peak loads; telegraph; mail, which most Ryerson plants pick up hourly at P. O. for quicker service.

Improved outlook — Building for the future, the Ryerson Chicago plant is being extensively rebuilt and enlarged. In Cincinnati — a completely new Ryerson plant at new location soon to be in operation. At Philadelphia — a new mill-type slitting line gives quick service on strip steel of any width up to 48".

New machinability records for alloy steel are being set by Ryerson Rycut — a free-machining medium-carbon alloy. Shop experience shows that Rycut machines 25% to 50% faster than standard alloys of same type, annealed or heat treated.

Shortages of some products such as bars, shapes, plates and sheets are inevitable. But many others are in good supply at Ryerson. Among them:

Tubing — Good tonnage of both seamless and welded mechanical tubing is on hand and new stock is coming in regularly. So while we may be short of a few sizes one week, they may be available the next.

Inland 4-Way Safety Plate — Large and medium patterns in a good range of sizes available for those who need material combining a sure-traction surface with strength, durability and fire-safety.

Also quickly available from Ryerson: forgings, cold drawn special shapes, tool steel, drill rod, chain, wire rope, expanded metal, Babbitt metal.

Joseph T. Ryerson & Son, Inc. Steel-service plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles and San Francisco.

SELL THE SALESMAN!

By Stanley E. Ringheim



S. E. ("Stan") Ringheim, Purchasing Supervisor for Crown Zellerbach Corporation, with offices at Seattle, Washington, was born at Radcliffe, Iowa, in 1904. Forsaking the tall corn country at a tender age, he moved with his family to Spokane, where he received his primary and high school education. He graduated from the State College of Washington in 1927, with a degree in Electrical Engineering.

His first business connection was with the Westinghouse Corporation, starting with their graduate student training course, followed by five years of sales work at headquarters and district offices.

In 1933 he joined the purchasing department of the Crown Zellerbach organization at Seattle. Steady advancement led to his appointment, in 1945, as Purchasing Supervisor. In this capacity, he handles the purchases for

HOW many of us, as purchasing agents, have ever bothered to "sell the salesman" on our own company's particular basic requirements? How often do we take the time to acquaint our selling friends with the peculiarities of our plant processes, our preferred practices, the unusual demands made upon equipment or material? It might be well for all of us to remember that the salesman is the purchasing agent's ally and counterpart in all his business transactions and usually provides the purchasing agent with most of the outside information needed to consummate the final purchase order.

In my experience, I have found that good salesmen heed the admonition of sales managers to "Know your product". Good salesmen are usually experts on their company's product, material, or equipment, and stand ready to render the special services that may be required. The missing link between us seems to be

the salesman's difficulty in understanding exactly what is necessary in order to serve our particular and special needs.

All purchasing agents are conscious of the time spent and the difficulties involved in making up detailed specifications. These are necessary in order to clearly and precisely indicate the actual requirements—the ratings, the model, the type, the service, the conditions, the trim, the fittings, etc., etc.—which must definitely indicate the desired end result. We need only look at the file of a concluded negotiation to bluntly face the evidence of the seemingly endless train of correspondence that takes place to bring the minds of buyer and seller to a common meeting place. Only after this technical "quiz program" do we finally risk giving the green light to the purchase order.

These difficulties, though, are not insurmountable, and can be largely
(Please turn to page 290)

capital equipment, expansion and construction programs.

He joined the Purchasing Agents Association of Washington in 1933, shortly after getting into purchasing work. An active and effective worker in Association affairs, he served as President of the group in 1947-1948, and National Director the following year. He is currently a member of the National Executive Committee of N. A. P. A. as Vice President for District No. 1.

Forward Looking Purchasing

By Stuart F. Heinritz

Abstract of an address at the annual conference of the Society for Advancement of Management, New York, November 3, 1950

FROM the very nature of purchasing, the person responsible for this function in management and operations must look forward, because he deals in futures.

Always to be considered are the questions of future availability and price, the possibility of changing demand, balancing the economies of immediate and quantity purchase against the cost and hazard of holding goods in stores for future use.

Then there is a time lag between the act of placing the order and the delivery of the goods purchased. This may be only a few hours for

a local "shelf item"; or it may run up to several months when dealing with a primary producer or if fabrication is involved.

Lead time is an essential part of every inventory control and production control system. Insufficient lead time is one of the few reasons cited in the new NPA regulations as a valid ground for turning down a rated DO order. The purchasing agent had better be forward looking if he expects to get the goods he needs.

But there are still more constructive aspects to this theme of looking ahead.

Forward looking purchasing is planned purchasing



TOO often, the procedure for advising the purchasing department of a requirement starts with the issue of a requisition after the need has become imminent. The purchasing agent cannot look forward unless he knows what to look for.

The obvious way of having goods on hand when needed is to maintain inventories of purchased materials in anticipation of the need. Unfortunately, this can also be the most wasteful and expensive method unless it is administered with a sound system of inventory control.

Inventory control may or may not be within the jurisdiction of the purchasing department. The fact remains that inventory policy must be implemented by purchasing. Inventory planning and purchase planning are inseparable. If the maximum benefit is to be derived from either inventory control or forward look-

ing purchasing, the two must be integrated.

In times of shortages, allocations and controls, purchasing is in a key position, for in such times production schedules are determined by what can be purchased rather than by what can be sold. Forward looking purchasing can mitigate such conditions to some extent by foreseeing areas of shortages and limitations of use, and providing adequate substitute materials where this is feasible.

Substitution possibilities are now the subject of intensive study in many purchasing departments, and plant expansion plans are already being adjusted to purchasing estimates of materials that will be available to support projected manufacturing capacity. Both these activities demonstrate that forward looking purchasing is essentially a long range planning operation, coordinated with general management planning.

Forward looking purchasing reduces basic costs



ALL purchasing is concerned with costs. The comparison of bids and forecasting of future market trends are standard practice in purchasing, but this is not enough. We are all too conscious that these trends are steadily and inexorably upward. Can anything be done about it?

Forward looking purchasing men have de-

veloped an approach to this problem that has been extraordinarily effective. It can best be described as the systematic attempt to engineer unnecessary cost out of the purchased product.

In analyzing a price, with all the many varied factors that must be included in a supplier's quotation, we come eventually to the

hard core of the manufacturer's cost of production. This is the irreducible minimum, and has traditionally been regarded as immune from price negotiation.

But there is an alternative possibility. It may be that the thing we are trying to buy, and are asking the supplier to produce, represents an unnecessarily high cost for the intended purpose. There may be a more economical design, or material, or production method, that can eliminate waste and reduce cost without putting any squeeze on the producer. If so, everybody benefits.

It is scarcely necessary to point out that with increasing costs of labor, materials, and costs of doing business, constantly adding to basic product cost, anything that can be engineered out of that cost is highly significant.

Purchasing is in an ideal position to initiate and spearhead such a program for three reasons:

1. Purchasing, more than any other part of the organization is cost-conscious, because that is a basic part of its responsibility.

2. Purchasing is cost-wise, through experience in price analysis, comparative evaluation of products and methods, and the handling of many comparable items.

3. As a clearing house for everything that comes into the plant, and with a keen appreciation of the importance of even small cost reductions, purchasing can logically suggest the specific projects that offer the greatest cost-saving possibilities as part of a comprehensive and continuing program of value analysis.

The actual savings are usually worked out and effected through design and production departments. Forward looking purchasing does not seek to encroach on their prerogatives, but it does not neglect the opportunity to set such action in motion.

Forward looking purchasing develops good supply sources



It is axiomatic in buying that purchasing performance depends on the performance of suppliers. Forward looking purchasing seeks to develop profitable, friendly, and lasting relationships with its sources of supply.

Just as his company expects to be in business a year from now, and ten years from now, the purchasing officer expects to be in the market for many years to come, and must conduct his work accordingly, that he may place reliance on suppliers who may reasonably be expected to be in business to serve him in those years ahead.

In the recurring periods of sellers' markets, it is especially true that the buyer "needs a friend". But this is not a principle to be dragged out of retirement and dusted off only in times of emergency. The only time when such relationships can be developed is before the emergency arises.

Forward looking purchasing educates sup-

pliers to an understanding of the company's needs and how their products are to be used, that their advice and cooperation may be most helpful and constructive. It develops alternative sources, as a means of keeping competition alive and maintaining a steady flow of materials despite unforeseen contingencies. It gives special attention to the progressive policies of suppliers, and their interest in product research, so as to keep in step with the most advanced technologies of supplier industries.

Where satisfactory sources are not available, or not suitably located, forward looking purchasing encourages the development of such sources. There are many instances where a large manufacturing plant in a new area has become the nucleus of other enterprises to serve it. The collective efforts of purchasing men have been a potent factor in the industrial development of many regions.

Forward looking purchasing has a broad concept of service



FORWARD looking purchasing encourages management to expect more, and demand more, of its purchasing departments, for the potential benefits of truly competent purchasing are still far from realized.

Purchasing is a service function in the general organization. Traditionally, it has been regarded as a service to production and operating departments. The foregoing analysis of forward looking purchasing policies and accomplishments indicates that this traditional concept has not been outgrown.

Through its activities in planning and scheduling, in maintaining the flow of materials, its programs of cost reduction and development of good commercial relations, purchasing makes a direct contribution to company policy and profits. It is a service to the

entire organization.

Purchasing does not seek a more exalted definition of its function and position, for its own sake. Recognition and rank in the management organization must be earned. It would be well, at this stage, to avoid any definition that would tend to "freeze" the function at any level. Forward looking purchasing asks only the opportunity for continued growth and broader service.

With understanding on the part of forward looking management, the ultimate development may be the emergence of a broader responsibility that might be described as materials management, of which the actual purchasing will be only a part. There is convincing evidence that acceptance of this concept of the job is not too far in the future.

How Norton reduced plant accidents by 50%

You Can't Buy Safety . . . But You Can Buy Protection

By Paul V. Farrell



Norton brings safety to the worker. Nurse from the hospital staff distributes goggles to workers in the Grinding Machine Division.

GETTING hurt in a plant accident is hardly to be recommended as required experience for a safety equipment buyer. Nor does an injury automatically qualify a man for that position in a modern industrial purchasing department. But when a capable buyer happens to have had practical shop experience, plus painful personal acquaintance with plant safety problems, it's a fair bet that a good job of purchasing safety equipment will be done just a little bit better.

This is the case at Norton Company in Worcester, Mass., manufacturer of abrasive products and grinding machinery, where management is carrying out a vigorous, progressive—and highly effective—safety program. The purchasing department, headed by George D. Seguin, General Purchasing Agent, has followed its normal practice of coordinating its activities with other departments for the good of the company. But beyond this it has a kind of particular interest in cooperating

wholeheartedly with the safety program, both in letter and spirit. Robert F. Kirkpatrick, who buys the 50 to 60 items of personal equipment for Norton employees, as well as such diverse products as fire extinguishers, respirators, signals, dust measuring instruments, etc., knows from personal experience the hazards that exist in a plant, the value of protective equipment, and the necessity for keeping employees continuously safety conscious.

A few years ago when Kirkpatrick was working in the plant, his attention was diverted by the action of a thoughtless co-worker and his hand was caught in a moving machine. He was severely injured. Today his skill and efforts are directed to helping others avoid similar accidents.

The presence of such a buyer in the department is interesting and somewhat dramatic, but it is, however, only one aspect of the larger pattern of close cooperation and mutual understanding that exists between purchasing and Norton's safety department, headed by Safety Engineer Nelson P. Ingalls. The purchasing department works closely with Ingalls at every point in which its activities affect the company safety program—a program which has as its primary aim the

The purchasing department provides workers with safety shoes at cost, promoted their use in the introductory period with a \$1-per-pair subsidy. Sound merchandising techniques encourage the use of personal protective equipment. Safety shoes are available in a selection of 24 types, well styled and carefully fitted.



Robert F. Kirkpatrick, purchasing department, discusses a safety mask with Safety Engineer Nelson P. Ingalls.

protection of the individual worker, regardless of cost.

"Inspection type" safety had always been the rule at Norton, with the chief emphasis being put on mechanical aids or preventive equipment. Inspectors would check the various machines and working conditions in the plant, then recommend that various items be bought and installed or placed where there appeared to be some danger. Purchasing, following company policy, sought out and bought the best equipment but the accident rate could not be budged downward.

An analysis by the company's insurance carriers pinpointed the difficulty, and led to a new Norton approach to the safety problem. It showed that roughly three out of four of all the accidents in the plant were due to personal failure, rather than to mechanical defects or dangers inherent in the work. The figures highlighted a basic principle of modern industrial purchasing—that the finest apparatus or material in the world can turn out to be a poor investment, or even a complete waste, unless it is used for the purpose intended, as intended, and to the full extent of its capabilities.

During the development of the new program, it was revealed that the plant employees, generally, did not know the company had such a wide variety of safety equipment, nor were they aware of the full capabilities of the items with which they were familiar. It was "news" that there were available, for instance, 8 to 10 different types of safety glasses

for various types of jobs, 6 different kinds of respirators, special types of respirators and noise and dust measuring equipment. A completely fresh start on the safety question had to be made. The results accomplished by the new program make an encouraging story.

The "conference" method of safety training was chosen. The emphasis was placed on the round-table exchange of ideas and information, as against the lecture method, which often makes the recipient of forced education resentful or indifferent. Small groups of supervisors parti-

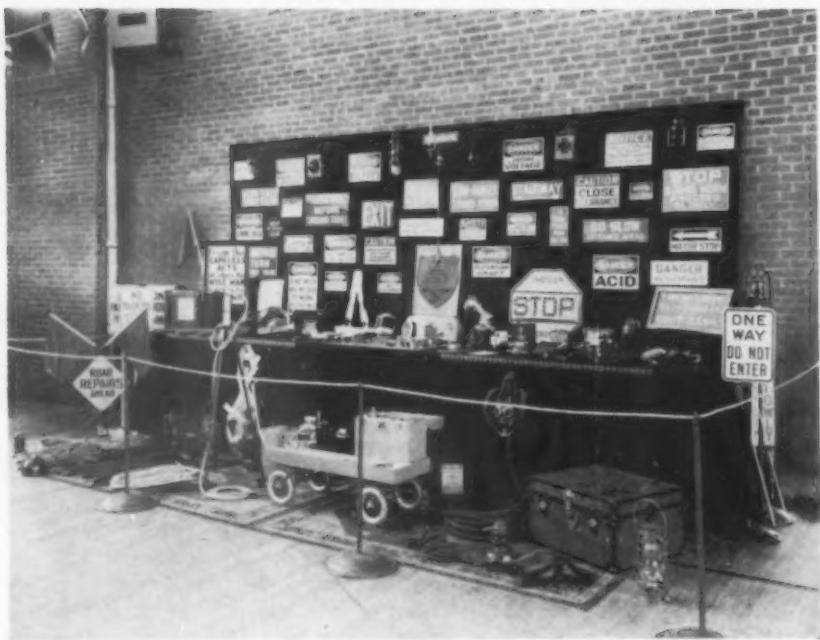
pated in these controlled conferences, and by a give-and-take process of questions, answers, suggestions, etc., painlessly and almost automatically had a completely new picture of the meaning of and necessity for safety. It was surmised, and correctly so, that people are basically safety-minded, but need a formulated program to translate their thoughts into correct action. Definite subjects were discussed, but they were so presented as to draw out the participants, so that by their own contributions to the discussion they would get the maximum value from the instruction.

The conference program involved 400 men, and took three months to complete. The initial target was a reduction of 50% in the number of plant accidents. How well the new method succeeded is shown in the results: the new program got under way in the summer, and by the end of the year accident frequency had dropped almost exactly 50%—the very goal Norton was shooting for. Although the company had a fairly low industrial average to start with—8.1 lost-time injuries per million man hours—the rate was now down to the encouraging figure of 4.1 per million man hours.

The personal approach in the promotion of the new safety program was of basic importance. The supervisors got answers to some of their own problems and at the same time got to know the other fellow's problems and ideas. They learned of the existence of various types of equipment, its potentialities, and

Display of protective equipment in the company cafeteria keeps Norton workers safety-conscious.





Plant hazards of all sorts are clearly marked. Plaque in the center of this display is the Safety Award of the Worcester Chamber of Commerce, won by Norton in a city-wide contest.

their responsibilities in bringing it to the attention of the people working under them.

In what might be called the changeover from a "static" to a "dynamic" use of safety equipment, the purchasing department played an important part, and from the start worked closely with the Safety Engineer. As the safety program took on greater significance in company operations, purchasing's liaison with the safety department extended beyond protective equipment as such. Production and maintenance equipment involving a safety factor also became a subject for consultation and cooperation.

Whenever equipment in use does not give adequate protection for the operator, a member of supervision and the Safety Engineer confer to decide what type of protection is needed. With their recommendations as a guide, the purchasing department searches out a manufacturer of the required equipment. If the protective device is not a standard product, it may result in an order for equipment made to their specifications.

At all times, there is close co-ordination between the two departments, and any questions that arise are generally answered through informal discussion. The relationship between purchasing and safety is described by Mr. Ingalls as a "perfect understanding", wherein each respects the ability and responsibilities of the other. As a matter of purchasing policy, salesmen with new types of safety equip-

ment are encouraged to see the Safety Engineer. The purchasing department arranges with the safety department, and with the production department when necessary, for these consultations.

A few examples illustrate the confidence each department places in the other.

The purchasing department has regularly bought asbestos and rubber clothing, including that used to protect workers involved in a special operation at an electric oven used in making Norton boron car-

bide wear-resistant products. The heat coming from the oven runs as high as 1700 degrees C. Purchasing began investigating the possibility of buying asbestos coats with one double-asbestos-lined sleeve and one single-lined, so that the worker's arm turned toward the oven door would have greater protection. The matter was first discussed with the Safety Engineer. Following his approval, the clothing was purchased.

On another occasion, purchasing was attempting to buy an electric-powered automatic floor sweeper, equipped with a driver's seat. The department was unable to locate a unit that was suitable, but did find a gasoline-driven sweeper. Such a piece of machinery is not ordinarily considered within the province of the safety department, but purchasing was aware of the danger of monoxide fumes, fuel fires, etc. The Safety Engineer was asked for his opinion and recommendations. He made suggestions concerning the installation of water baffles and some minor changes. These were accepted by the purchasing department and the unit was purchased.

When a buyer in the purchasing department had an order to replenish the company's stock of drop cords, which are not generally classified as safety equipment, he nevertheless felt that a safety element was involved and asked for recommendations from the safety department. Safety suggested a dif-

(Please turn to page 292)

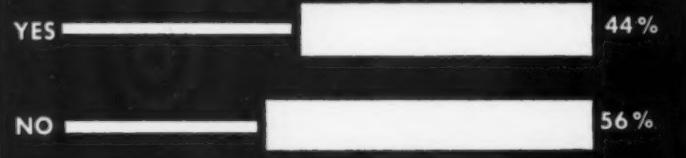
Effectiveness of safety equipment is enhanced by clear instructions as to its proper use.



What Should Be INDUSTRY'S EXPANSION POLICY?

The argument over industrial expansion is no longer simply a businessman-bureaucrat quarrel. In the present emergency, the problem of increasing production has become a matter of national policy. Both industry and Government agree on the need for some expansion to meet already high civilian demand and increasing military requirements. But there are questions — should the expansion be "natural", based on the law of supply or demand, or "planned" toward an arbitrary, fixed goal? How far can we go? Purchasing agents, close to both sides of the supply-demand seesaw, have examined some of the basic problems involved.

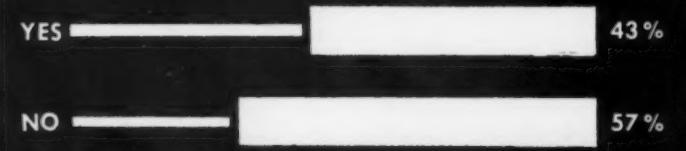
① Do you think that industry is expanding sufficiently to meet both military and civilian needs during the next few years ?



② In your opinion, what specific industries must expand at a greater rate to meet the growing demand ?

Steel was named most often, by a margin of more than two to one. Aluminum was next, followed by chemicals, rubber, copper, paper and paper products, and non-ferrous metals as a general category. Electronics, textiles, aircraft, plastics, lumber, nickel, transportation, brass, petroleum and machinery were also well represented.

③ Do you feel that Government action is necessary to bring about industrial expansion ?



What particular actions should the Government take ?

Accelerated or higher depreciation allowances were named most often, by a two to one margin. Broader credit, direct loans and more moderate taxes followed in that order. Others named were: Government-built plants, Government-guaranteed loans, better distribution of Federal business.

PURCHASING OPINION

④ Will heavy expansion in any industry tend to create shortages of materials you use ?

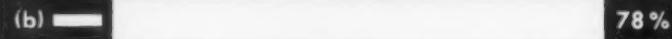
Almost a third said such expansion would create shortages for them. Various industry expansions will create scarcity in supply of steel, aluminum, plastics and copper. Individual cases named included shortage of soda ash caused by aluminum expansion, shortage of alcohol by rubber expansion, shortage of styrene and plastics by rubber expansion, shortage in cotton cloth and certain chemicals by increased gunpowder production.

⑤ One authority says industry faces these alternatives:

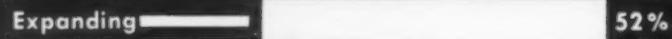
(a) Immediate large-scale expansion, which could necessarily be accompanied by strict controls, or

(b) Long range (2-3 years) program of expansion which could be accomplished with a minimum of indirect controls.

Considering the present circumstances, which do you feel is the better choice ?



⑥ Do you feel that we were in the midst of an "expanding economy" even before Korea, or that we were headed for a decline ?



—WHAT THEY SAY—

"Exports of critical material such as sulfur should be curtailed."

"The near majority in the next U. S. Senate of conservative Republicans may correct New Deal practices of foreign aid, limiting volume which would aid domestic requirements."

"No use in expanding unless all critical elements are studied and expanded in proportion to requirements of basic items being expanded."

"We have industry too sensitive to war potential. Expansion for war needs should be Government venture which could be stopped at conclusion of war, like synthetic rubber plants."

"War with Russia is inevitable sooner or later. We must prepare for it now or never."

"The Government better do something about the priority set-up and make up its mind to give industry some help if it wants military production. The Government is its own worst enemy."

"Government should act as a guide only to aid in getting best possible results but should stay out of any direct or indirect participation in operations."

"There is too much dictatorship today. Too many directives. Industry will come through when necessary."

"Looking backward on the Thirties has caused bad judgment on the part of many with respect to necessary preparation for the Fifties."

"The growth in population plus theoretical increase in productive efficiency point to an expanding economy."

How big should a purchasing department be?

Personnel for Profits

By B. D. Henderson, Assistant to Vice President, Westinghouse Electric Corp.

Is there a purchasing agent alive who has not been confronted with serious problems in personnel and budget as the business cycle changed from peaks to valleys and back again? When business booms, we have insufficient personnel to handle our service functions alone, much less do a good buying job. When business is depressed, the pressure is again extreme to show cause why the purchasing department should not be cut back to a level sufficient only to handle the service functions.

One of the most able executives I know once made the statement that the better the purchasing department is, the less attention it will get because there is so little tangible evidence of its results. I believe that is a true statement. Generally speaking, purchasing departments get attention only when they fail. This lack of attention or appreciation is a most serious matter.

Before we, as purchasing agents, can sell management on the proper amount and quality of personnel needed, we must first decide for ourselves just how big the purchasing department actually should be. Let's go to work on that problem and analyze it for ourselves. The first thing to do is examine the size of the job to be done.

Three-Way Job

The work of the purchasing department can be split into three separate types of function:

1. The clerical functions.
2. The service functions.
3. The profit functions.

The clerical functions include the job of handling the paper work, and keeping the records. This means typing the purchase order, mailing it, paying the invoice, keeping price

records, keeping adequate files. The service function is the job of getting material or information from the supplier when needed. The profit function includes the responsibility for getting the material at a price and a quality and in a manner which will produce the lowest production cost.

If we are realistic, we must agree that the order in which they have been mentioned is the order of their priority. We must do the paper work and keep the files up-to-date and get the orders placed before we can do anything else. This is obvious because the performance of our service and profit functions is completely dependent upon having the proper information with which to work.

It also seems self-evident that the service function must come next in order of importance. No working purchasing agent needs to be told that everything else must be dropped or sacrificed if a shortage of material threatens the continuance of production. Making a profit in the purchasing department is extremely important, but it can be done only after the other two things have been taken care of. No buyer, regardless of his experience, can do a good job of negotiation with all the attendant research that requires, if he doesn't have good records to start with and he doesn't have sufficient time to properly attend to the negotiation.

Accentuate the Positive

Breaking down our work in this way, we can appraise the effect of each of these functions on our operating profit. The clerical expense is essentially negative in its profit results. We must have the clerical work done, but the clerical expense is a direct subtraction from profit and should be kept at the lowest possible level which will permit the maintenance of necessary records and paper work. The service func-



B. D. Henderson

tion, expediting, is also essentially negative in its contribution to profit. Expediting, itself, costs money, and failure of the service function which interrupts production can cause large losses. Up to this point, the entire function of the purchasing department is negative in its contribution to profit. It is like an insurance policy: Its purpose is the prevention of loss. If the policy is sufficiently large to cover the risk, absolutely nothing is gained by having a policy which is larger than the value of the material to be covered. Stating it another way, the clerical and service functions of the purchasing department are vitally necessary, but, since they are strictly an expense burden, no more personnel should be supplied to do the job than is absolutely necessary.

Personnel above that amount should be available to contribute to the purchasing department's profit function. This profit function requires higher calibre personnel than the other functions and it also re-

Address at Sixth District Conference,
N. A. P. A., Columbus, October 27, 1950

quires personnel to spend large amounts of time on investigation, planning, selling, and negotiation.

Hidden-Profits—Obvious Expense

As we said above, the profit obtained by better material at lower cost is a hidden profit. This profit is camouflaged by the up-and-down movement of the market. It is very difficult to isolate and identify. It shows up in the plant's profit and loss statement and the cost of material; and the cost of material is affected by many other things, including production efficiency and engineering ingenuity.

Since the expense of the purchasing department is easily identified, quickly measured, and obvious, but the profit of the purchasing department is sometimes intangible and always hard to measure, it usually results in over-emphasis of expense and under-estimation of profit potential. Since clerical work and service work come first, frequently there is not enough competent personnel to handle the profit-making part of the job. For that reason, many purchasing departments are too small.

How important is the profit-making function?

In most industrial organizations, 30% to 75% of the cost of production is represented by the cost of the material purchased. It averages better than 50% for all industrial organizations. There is considerable evidence to prove that the difference between a purchasing department barely able to handle the clerical and service functions, and a purchasing department properly staffed

to handle the profit function also, may result in a reduction in the cost of material by as much as 5% to 10%. This means that having an adequate purchasing department may result in the addition of 2½% to 5% of the company's sales as profit.

The Cost of Proficiency

This brings us up to the key question, "How much should our company spend for additional personnel or higher caliber personnel, primarily for the purpose of improving the buying job itself?" Obviously, there is no "pat" answer to this question. In most purchasing departments, 2/3 of the departmental expense, or more, goes for the clerical and service functions, and only a third of the expense, or less, represents buying for profit. In other words, in a typical purchasing department, we could probably double our profit-making personnel and only add 1/3 to the department's expense.

In most purchasing departments, we wouldn't be too far from right if we said the purchasing departments represent somewhere between ½% and 1% of the company's total operating cost. Doubling the purchasing department's profit-making personnel would add only 1/6 to 1/3 of 1% to the company's cost, but it might easily make the difference of 2½% to 5% in the company's profit. If that is true, most purchasing departments are obviously far from reaching the point of diminishing returns. Most purchasing departments could add to their company's profit by increasing their buying personnel and the

caliber of the buying personnel, even though this also meant adding additional purchasing department costs.

If our discussion to this point is sound, then we have reduced our problem to two questions:

1. How much additional profit can additional personnel earn in the purchasing department?
2. How can we back this conviction on our part with facts, so that we can sell it to management?

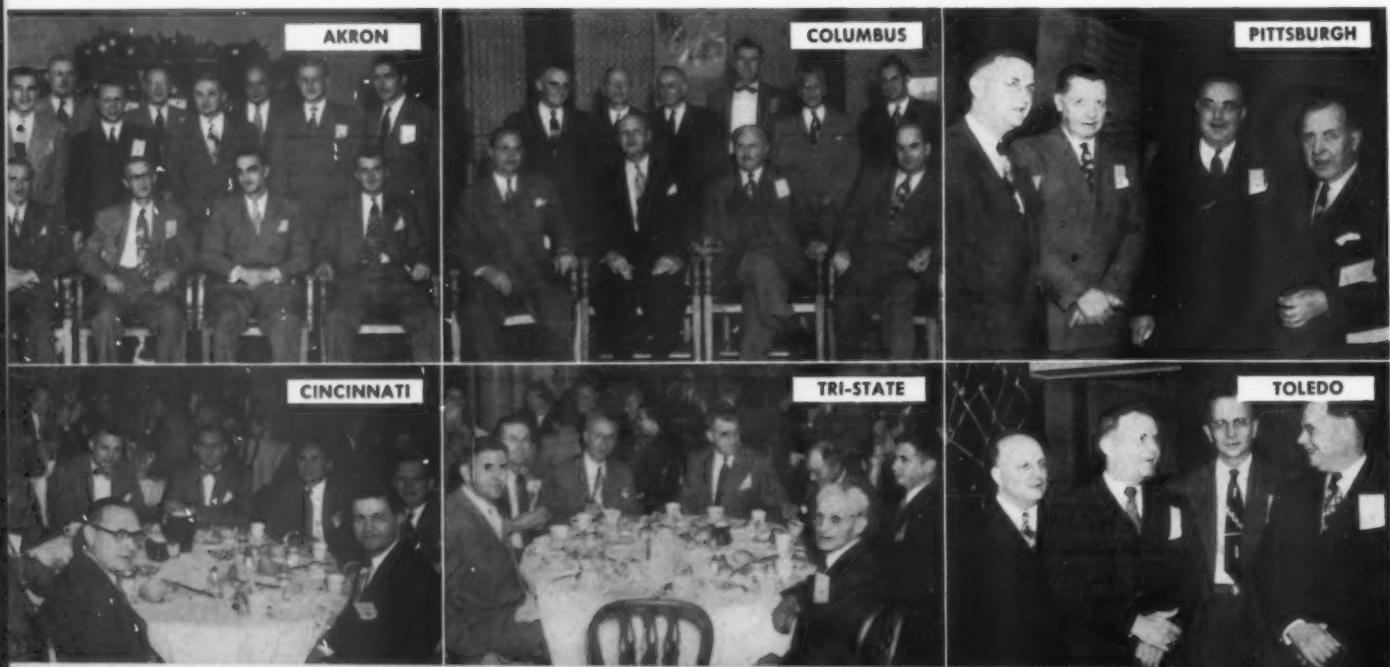
Profit-Making Personnel

I dare say that very few purchasing agents have any real idea of the dollar value contribution that the purchasing department makes to their company's profit. In my own company, we have a program which gives us some basis for analysis. I know that some other companies, particularly the larger ones, do much the same thing. In Westinghouse, we call it cost reduction. Each purchasing agent in each division keeps a record of reduction in the cost of operation which results either from purchasing department initiative or from major participation in the cost reduction effort by the purchasing department. To be sure that the results are real and beyond question, each of these projects or dockets is audited by an independent agency within the plant, usually either the accounting department or the cost analysis section in the engineering department. The results have been eye-opening.

This report has proved that the purchasing department is earning

(Please turn to page 294)

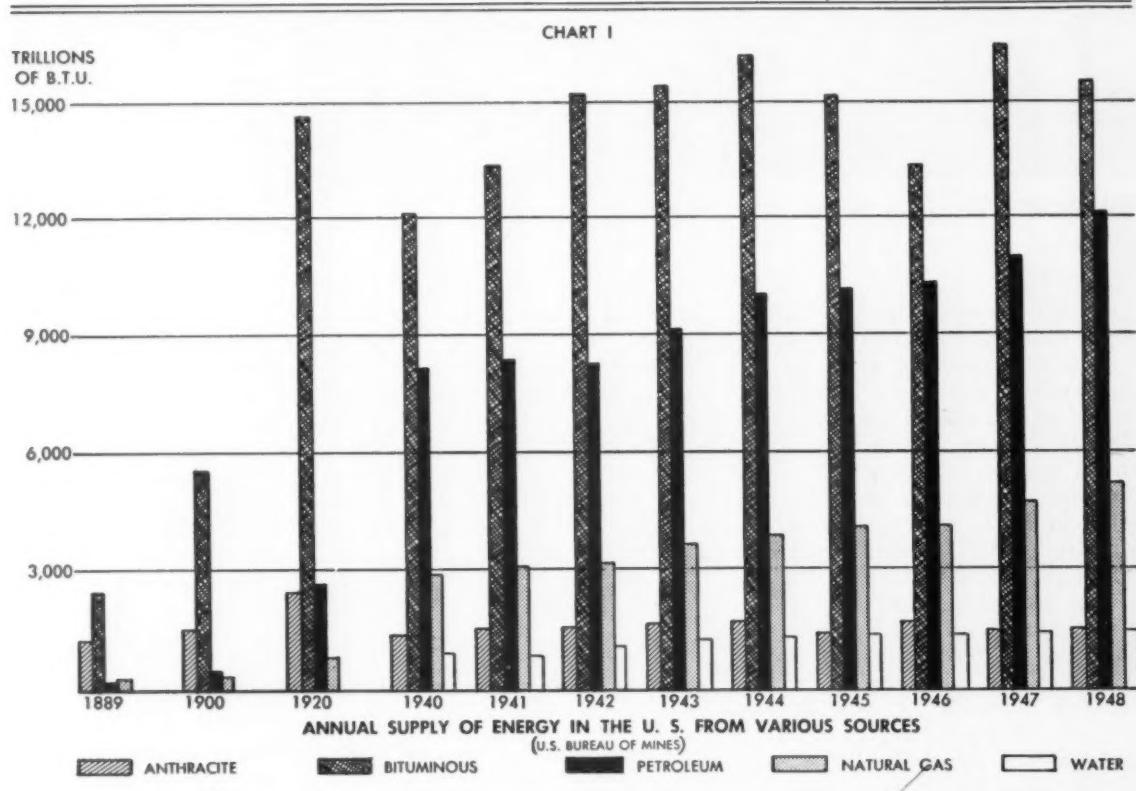
District 6 Discovers Columbus



The burning question . . . What fuel?

The Coal Industry Views Its Lost Markets

By A. Wyn Williams



SUMMARY: Fuel oil and natural gas are challenging the historic dominance of coal as the source of industrial power. Analysis of the situation shows that neither cost nor convenience can explain this trend. It is a question of reliable supply. Coal has not priced itself out of the market, but has literally "struck" itself out. While reserves of oil and gas are measured in decades, the coal supply is still reckoned in centuries. Coal is the nation's long-term life line among industrial fuels.

ONE of the most lively forums at the annual convention of the National Association of Purchasing Agents at Cleveland last June was that on fuels. It discussed a problem that for some past few years has intermittently bedeviled the purchasing agent: What is the best source of heat and energy for a plant, having regard to cost and availability?

Up to the end of World War II, the problem in general was to choose between the blandishments of the fuel oil salesman and the truculent

unpredictability of Mr. John L. Lewis.

Since the end of World War II, the phenomenal growth of the natural gas industry has presented another fuel for choice. It is competitive with both coal and oil for both space heating and steam raising purposes, and the cost of installing new equipment under existing boilers to handle natural gas is not, by itself, a barrier to conversion to this newer form of energy.

Before World War II, natural



COAL, the old reliable . . . when the miners are working

gas pipe lines were chiefly in areas where coal was not competitive because of transportation rates, in the southwestern states and in California. Since the end of the war, pipe lines have been extended to the central northern states, and when the program of expansion is completed in 1952, natural gas will be available on the Atlantic seaboard and in New England. Few realize that the natural gas pipe line mileage of the country already exceeds the country's oil pipe lines by some 100,000 miles, and exceeds even the country's railroads by some 20,000 miles. When completed, the natural gas pipe line network will exceed 300,000 miles and form a web covering the nation making natural gas available to every major city.

Growing Importance of Gas

Chart I illustrates the growing importance of natural gas in supplying the country's sources of energy and the gradual passing into an eclipse of coal, on which this country's industrial might was founded. In evaluating the table it must be remembered that not all the energy produced by oil or natural gas is energy that has replaced coal. Much of the oil and gas is used in regions of the country where coal is only available at high cost such as in the Southwest and California. Some of the newer flourishing industrial areas would still be agricultural had they had to depend on coal. Also it must be remembered that much of

the energy supplied by petroleum is driving the country's millions of automobiles in which function coal cannot compete at present. (Perfection of the coal fired gas turbine might change the picture in this some day.)

In 1889, when statistics began to be kept, coal almost held the field supplying about 90% of the country's energy. At the end of the next decade the two coals had almost

doubled their contribution, 7,123 trillion btu's against 3,746 trillion btu's the decade before. It still was not far from 90% of the country's total supplied energy. By 1920 coal contributed less than 80% of the country's energy, and its proportional contribution has fallen steadily almost every year since until today it supplies less than 48%.

Coal Loses Ground

But the salient factor about the contribution of coal to the country's energy is not in the proportional loss but in the fact that its net contribution, not only has not grown with the growth of the country but has, on the contrary, diminished. The 17,115 trillion btu's contributed by the coals in 1948, when the population was approaching 150,000,000 was less than the 17,336 trillion contributed 28 years before when the population was only roughly 106,000,000. In the past year and a half, coal has drastically lost still more ground. Coal is not holding the markets it once had, nor participating in their growth.

By contrast the energy supplied by petroleum is today more than 400% the volume supplied in 1920, while that supplied by natural gas has increased by 600%. Now what are the respective merits of these competing fuels and, in view of the relative disfavor into which coal has fallen, should purchasing agents try to influence conversion of equipment to burn other forms of fuel? Would this result in more uninter-

TABLE I

AVERAGE RETAIL PRICES OF CERTAIN FUELS

Year	Bituminous (unweighted prices per ton)	Anthracite (average prices, stove & chestnut per ton)	Fuel Oil No. 2 (Quarterly av- erages in N. Y. City per 100 gal.)	Natural Gas (average prices per MCF)
1939	\$8.52	\$10.81	\$6.29	73.5c
1940	8.60	11.34	6.73	71.1
1941	9.10	11.94	6.92	72.0
1942	9.51	12.44	8.18	70.7
1943	9.94	13.17	9.09	70.0
1944	10.27	13.91	9.09	69.1
1945	10.49	14.39	8.34	68.3
1946	10.95	15.96	8.54	67.6
1947	12.99	17.17	10.01	65.6
1948	15.40	19.17	12.99	65.3
1949	15.75	20.13	11.21	n.a.

(Source: Bureau of Labor Statistics)

(Source: U.S.
Bureau of Mines)



FUEL OIL . . . we're using four times as much as in 1920

rupted production and in more efficient and cheaper operation of heating and steam raising plants?

Relative Convenience

An answer to some of these questions may give a clue to the flight away from coal and be a guide as to whether the trend should be encouraged, especially now that the third fuel, natural gas, is about to become easily available. By and large it can be stated that the techniques of combustion are now so advanced that for our purpose the question of comparative efficiency of equipment used by the different fuels can be omitted. Properly installed grates, of the required type for the particular function called for, can operate as efficiently as gas or oil burners and vice versa. So the question which fuel to buy has to be considered from other angles.

Let us first examine the convenience. There is not much argument that oil has advantage over coal and natural gas over either. Both coal and oil have to have storage facilities. Oil storage facilities can sometimes be put underground and storage is more economical of valuable real estate than in the case of coal. In the case of oil, it has also a convenience advantage over coal in that there is no problem of ash disposal. However oil is only on a par with natural gas in this respect, and no storage facilities are required for the latter.

However the fact that coal and

oil have to be stored does not give natural gas an unqualified advantage. It has been the case with natural gas outlets that they have failed during periods of peak loads, such as in an unusually severe winter. Plants found themselves forced to curtail production without warning which would not have been the case had they been able to fall back on reserves of previously stored fuels whether oil or coal. We shall refer later to continuity of supply of natural gas in another aspect. Suffice it to say that some of the large natural gas pipe line transmission companies are aware of the danger of the peak load and are arranging

for vast underground storage fields where reserves of natural gas can be accumulated in the summer months against the extra consumption by domestic users in the winter.

The Price Comparison

How about price? Superficially, natural gas has all the advantage. Coal, both anthracite and bituminous, as well as fuel oil have in the past decade participated in the spiral of rising prices characteristic of the period. The price of natural gas is contradictory of the times, being slightly lower than ten years ago. Table I, taken from *Utilization*, the trade magazine of coal uses, tells the story.

This table is interesting only as giving the trend of prices. To find whether the purchaser of the particular fuel is getting the proper functional return for his money and to what extent the change in prices has altered the relative functional money return it is necessary to find the cost of the same heat producing unit from each fuel. This is given in Table II.

It can be seen that from a thermal point of view, coal still has the advantage in price both as regards bituminous and anthracite over oil, while bituminous holds it over natural gas. But the gap has been very much narrowed. Fuel oil, since the war, lost its price advantage on a thermal basis over natural gas. Therefore it is hardly true that coal has priced itself out of its markets. In any case, as far as the use of coal by industry is concerned, the cost of fuel is never more than a small proportion of the cost of finished goods. Therefore price by itself would only be a minor consideration in abandoning coal.

TABLE II
RETAIL PRICES IN CENTS PER THERM

Year	Bituminous	Anthracite	Fuel Oil No. 2	Natural Gas
1939	3.25	4.29	4.72	6.84
1940	3.28	4.50	4.86	6.61
1941	3.47	4.74	5.02	6.70
1942	3.63	4.94	6.01	6.58
1943	3.79	5.23	6.71	6.51
1944	3.92	5.52	6.71	6.43
1945	4.00	5.71	6.17	6.36
1946	4.18	6.33	6.35	6.28
1947	4.96	6.81	7.23	6.10
1948	5.88	7.61	9.38	6.07
1949	6.01	7.99	8.09	n.a.



NATURAL GAS . . . more mileage of pipe lines than of railroads

What is the main factor that an industrial plant looks for in its fuel supply, if, as seems proved, it is not the money return on a thermal basis? Two recent studies seem to provide the answers and they may be of some guidance as to what the long trend policy should be in the matter of fuel purchase. The factor most sought for is *availability of supply*.

Reliable Supply

Appalachian Coals, Inc., made a study of lost markets during the period of September 1945 through June 1949, coming up with two divisions: (1) the months in which no major strike occurred; (2) the group of months in which strikes stopped production for at least two weeks of that month. The results were startling and convincing. Each strike month caused lost markets which were on the average 8 times greater than the lost markets in months of full work.

This finding was confirmed in a more recent study by the coal trade paper, *Utilization*. It addressed questionnaires to industrial users of coal to find out to what extent coal might have been temporarily or permanently displaced by other fuels as a direct result of the coal strike ending this April. Those who had converted from coal or intended to do so were asked to state their principal reason. Unreliability of supply came first, followed by rising costs. Next came convenience of other

fuels, with troublesome storage and handling only a minor reason for switching from solid fuel.

Where does this leave the problem? Natural gas seems to be vulnerable both from a short term and a long term trend. As regards short term reliability of supply, we have already referred to the peak load menace. There is another short term hazard. In the past, natural gas fields upon which considerable industrial development depended, notably in New York, Michigan, and Indiana, have run dry with practically no warning. There is no reason to suppose that it won't happen again. In fact, a forewarning is that, since the advent of the long distance pipeline, a number of fields have run dry in Louisiana.

Looking Ahead

As for the long trend outlook for natural gas availability, discounting the possibility of fields suddenly running dry, optimistic estimates give the industry only some fifteen to twenty years before reserves are exhausted. This is at least half the expected lifetime of the country's oil reserves and when they are exhausted there are foreign reserves to draw upon, which are not available to the natural gas industry.

As for coal, its reserves are measured in centuries, instead of in decades, and in long term availability it has all the advantage. As for short term availability, coal has undoubtedly a most unsatisfactory

record because of labor stoppages. But the coal mining industry, both on the union and managerial level, is thoroughly aware that the pattern of the past few years cannot be indefinitely repeated and that industry must have a continuous supply of coal available. The latest coal strike settlement assuring peace until at least 1951 is a recognition by the unions that continuous interference with supply is harmful to coal markets. With the disturbed world conditions, there is another favorable aspect of coal availability. Hostilities will have less impact on the supply of coal for industry than they would on oil, especially as more of the latter comes to be imported.

Gas to Cost More

With regard to price, the present price of natural gas is an artificial one. It is a heritage from the time it was regarded as waste at the well. When the first interstate pipeline was constructed, initial costs at the well ranged from 0.4¢ to 1.5¢ per mcf. Today contracts are sometimes as high as 15¢. In addition, cost of building long distance transmission lines has more than doubled in the past ten years. Present natural gas prices which have virtually remained stationary for a decade do not reflect rising costs. When they do, the price will be two to three times higher, which will make natural gas a very costly fuel for industrial boilers.

On the other hand, the cost of fuel oil is already responding to the economics of the situation and is heading downwards. That the period of peak prices is past seems proved by the agitation to curb foreign importations to prevent a catastrophic drop in domestic prices. Similarly with coal, the period of advancing prices seems also behind for this fuel, as lost markets (some 25% of the 1947 production) will inevitably result in closing down of marginal high cost mines and result in a generally lower trend of prices.

In the short trend policy the problem of which fuel to buy will still continue a perplexing one. But in the long trend Dr. C. J. Potter was undoubtedly on safe grounds when he said in his closing remarks at the Fuel Forum in Cleveland: "Purchasing Agents will best serve the long range fuel needs of their principals if they recognize the importance of the coal industry as the nation's long life line and keep this recognition in mind in their day to day determination concerning sources of fuel and reasonableness of fuel costs."

Work analysis improves purchasing performance

Developing a Contract

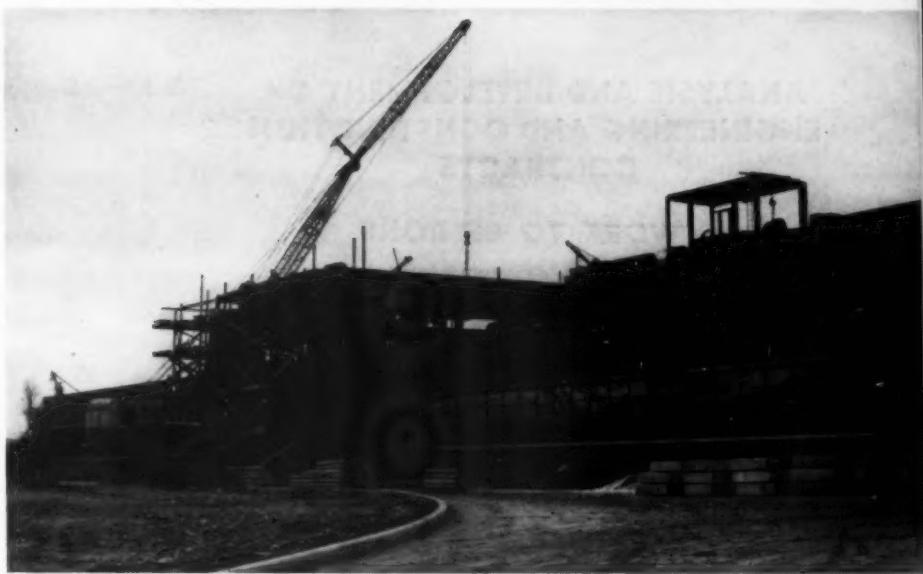
By **Eugene S. Page**, Director of Purchases, Great Lakes Carbon Corp., Chicago, Ill.

INFORMATION that is analyzed, developed, and assembled in an outline form is usually more complete, shorter, and more useful, than information presented in any other form. This approach is applicable to many phases of purchasing. When it is properly carried out, it provides a guide for orderly, step by step procedure, and a check list of essential points that must be covered in developing a project. "Loose ends"—the bane of any complex or sizable transaction, and the cause of annoying delays in its final completion—can be held to a minimum by preplanning in outline form, and the work involved in handling comparable situations that may arise in the future is simplified and expedited.

The example presented in this discussion deals with the analysis and development of engineering and construction contracts. It was drawn up to serve the purchasing agent who may not be regularly engaged in this type of purchasing. In the majority of manufacturing industries, the purchasing man deals primarily in materials and commodities—to a lesser extent in the purchase of services—and even less in the negotiation and execution of engineering and construction contracts. In our company, for example, and in many other companies, engineering and construction contracts are not a regular day-to-day affair. Yet when they do arise, they are likely to represent a very important responsibility. Under such circumstances, the check list and guide serve as a tremendously valuable tool for the purchasing department.

Orderly Procedure

Breaking down a project into its component details and organizing those details in an orderly sequence does not necessarily mean that the outline as a whole represents a chronological "time table" for purchasing action. In fact, such an ap-



proach, with each step waiting on the completion of another, might entail a good deal of needless delay.

For instance, in such a project as outlined herewith, it is obvious that although a complete definition of the work to be done (Section I) is essential before the contract can be drawn, much of the information on the suitability and availability of possible contractors can be developed at the same time, while awaiting the job specification, and thought can be given to matters of policy such as the type of contract to be negotiated and the type of proposals to be invited for different parts of the work. Then as the definition of the project develops toward completion and the time element becomes increasingly urgent, calling for purchasing action, the purchasing agent is in a position to proceed promptly and on a basis of sound and considered information, with the assurance that no essential detail has been overlooked or slighted.

The first step, therefore, is to break down the problem into its

more important aspects or phases, using these as the main headings or sections of the outline. In the case of engineering and construction contracts, these main headings seem to be: I. The work to be done; II. The type of contract to be negotiated; III. The selection of those who will be invited to bid; IV. The selection of the contractor; V. Execution of the contract.

With such a breakdown, it is possible to start assembling information, establishing policies, and making certain decisions along the way, so that the many detail problems involved, instead of complicating and getting in the way of the final decision, fall into a pattern and bring all the loose ends together so that the eventual contract toward which all of this preliminary work has been directed, becomes a relatively simple—or certainly a clearly defined—problem.

Questions and Answers

Analyzing and outlining the problem does not, of course, provide the

answers. However, the methodical statement of factors involved does suggest and indicate the questions for which answers must be found. For example, Section I, outlining the work to be done, will raise such questions as the following:

1. What are the facts of the job—its size, its location, and the requirements of time for its completion?

2. What is the scope of the job—what is involved in the way of process and general engineering, procurement of and accounting for materials, as well as the actual construction?

3. How much of the work, including labor and material, will be furnished by the owner? This includes the question of how much the owner has done up to the time the contract is executed, as well as that which he will do thereafter. The purchasing agent may have some procurement work to do on his own company's account that must be co-ordinated with general progress on the job.

4. What, specifically, is the work (labor and materials) to be furnished by the contractor *in each phase* of the project, from process

engineering right through to the actual construction?

Meanwhile, consideration may be given to Section II, concerning the type of contract to be negotiated, and the type of proposal desired from bidders. Definition of the work to be done, being developed under Section I, represents only one of six major topics that must be covered in the contract.

At the very outset, every contract starts by identifying the parties to the contract, so we can logically note this as Item No. 1 in our outline. Normally, there are two parties in-

ANALYSIS AND DEVELOPMENT OF ENGINEERING AND CONSTRUCTION CONTRACTS

I. WORK TO BE DONE

A. FACTS OF THE JOB

1) Description

- a) Time
- b) Size
- c) Locality

2) Scope

- a) Process Engineering
- b) General Engineering
- c) Procurement
- d) Accounting
- e) Construction

3) Time

B. ACCOMPLISHMENT TOWARD JOB BY OWNER

- 1) Process Engineering
- 2) General Engineering
- 3) Procurement
- 4) Accounting
- 5) Construction

- a) Labor
 - b) Materials
- i) Past
 - ii) Present
 - iii) Future

C. TO BE DONE BY THE CONTRACTOR

- 1) Process Engineering
- 2) General Engineering
- 3) Procurement
- 4) Accounting
- 5) Construction

- a) Labor
- b) Materials

II. TYPE OF CONTRACT

A. PROPOSAL and B. CONTRACT

1) Parties

2) Work

- a) Facts of the Job
- b) Accomplishment toward Job by Owner
- c) To be done by Contractor

3) Remuneration

- a) Lump sum price

Firm

- b) "Cost Plus"

- i) Classification & Definitions of Costs and/or charges.

or

- ii) Costs and/or charge rates for all kinds and classes of Labor.

- iii) Costs and/or charge rates for all materials (Ability to purchase efficiently).

Adjust-

- iv) Determination and auditing of Quantities.

able

- c) Fee

- d) Saving Incentives, guaranteed maximum Cost or Price, Variable Fee, etc.

4) Method of Payment

- a) Invoices
- b) Certification
- c) Acceptance

- i) Partial
- ii) Final

Time

5) General Conditions

6) Time

volved—the owner and the contractor. But will others be involved—such as professional consulting services at various stages, or subcontractors? If so, should their status and responsibilities be defined?

Then there is the important matter of remuneration under various types of contracts—a large and complex subject in itself, and one which cannot be given too much attention. A contract of any considerable importance and size may involve the most careful and specific definitions of cost, prices, fees, incentives, premiums, and bases of calculation.

Contractors' Qualifications

Selection of bidders is another matter of prime importance. How many bidders shall be contacted? Is their proximity to the job site an economic or legal factor? Do they have specialized qualifications or experience for the type of work contemplated? What are their labor union relationships, and their ability to supply the materials and services required on an established schedule?

Award to the specific contractor among the various bidders involves

a refinement of these questions, plus others: his interest in and current position for taking on the work; the type of contract proposed, including cost of remuneration; and considerations such as previous business relationships and reciprocity.

Regarding the contract itself, there are the questions of whether a letter of intent can be avoided, and of review and approval by legal, insurance, operating, and other departments concerned.

With these introductory remarks, the outline is presented herewith to speak for itself.

III. SELECTION OF BIDDERS

A. NUMBER OF BIDDERS

- 1) Number of Contacts
- 2) Method of Contact

B. LOCATION

- 1) Proximity to job site.
- 2) Government boundary limitations.

C. CONTRACTORS

- 1) Type of work specialties
- 2) Size and responsibility
 - a) Financial
 - b) Work
- 3) Previous Business
 - a) Solicitation and bids
 - b) Contracts
- 4) Union relationships
- 5) Material Position
- 6) Reciprocity

IV. SELECTION OF CONTRACTOR

A. QUALIFICATIONS

1) Physical	a) Size b) Location c) Responsibility	i) Process Engineering	Past
2) Experience	a) Type b) Size	ii) General Engineering	Pre-
3) Ability	a) Type b) Size c) Specialties d) Organization e) Methods of Performance f) Union Relationships g) References	iii) Procurement iv) Accounting v) Construction	sent Future

B. PRESENT POSITION

- | | | | |
|-------------|---------|--------------|------------------|
| 1) Interest | a) Type | i) Labor | Office and field |
| 2) Ability | b) Size | ii) Material | |
| | c) Time | | |

C. TYPE OF CONTRACT PROPOSED

- 1) Parties
- 2) Work
- 3) Remuneration
- 4) Method of Payment
- 5) General Conditions
- 6) Time

D. OTHER CONSIDERATIONS

- 1) Previous Business Relations
- 2) Reciprocity

V. EXECUTION OF CONTRACT

A. LETTER OF INTENT if any, and B. CONTRACT

- | | |
|---|---|
| 1) Preparation, Review, and Approval for Owner, By: | a) Law Department
b) Product Division
c) Operations Department
d) Insurance Division |
| 1) Execution, for | a) Contractor
b) Owner |
| 2) Distribution | |

C. MEMORANDUM PURCHASE ORDER (for internal record purposes only)

Commodity Round-Up

Abstract of buyers' market reports at District 6 Conference, Columbus, Ohio, October 27, 1950

PAPER

HIGH PRODUCTION, HIGHER DEMAND

By R. N. Betts

American Education Press, Columbus, Ohio

FINISHED paper prices follow in the wake of increased material and labor costs. There is adequate supply of raw materials, and production of record proportions. Why is paper harder to obtain and why are deliveries slow? Business generally is 10% above one year ago. When a trend like that occurs, no part of our paper-using economy remains unaffected. Also, many new uses are being found for paper, such as the use of thousands of tons of kraft as a protective coating for big pipe lines and for plastic laminations, etc.

Turn of the year will probably show some improvement, brought about in part by termination of the inventory buying spree.

STEEL

THE BIG QUESTION MARK

By H. W. Ledebur

Hammond Iron Works, Warren, Pa.

HOW the Defense Department intends to spend its 30 billion dollars is Problem No. 1. Up to this time, secrecy surrounds this matter, leading the public to believe that the impact on civilian production will be greater than is actually the case. If the combination of credit terms and material shortages hit industry at

the same time, the impact could cause a sudden curtailment of the manufacture of consumer goods.

It is the opinion of men close to the NPA that warehouses, which received more steel in August than ever before in a single month, and whose stocks are still low due to heavy customer demand, will continue to get large quantities of steel.

Lacking definite word as to the exact tonnage required for direct and indirect defense orders, steel mills have withheld January allotment schedules. Once these are released, there will be a mad scramble to meet lead times and, if possible, beat the other fellow to unallocated tonnage.

LUMBER

SHORTAGES ARE TEMPORARY

By Owen S. Willson

The Dougherty Lumber Co., Cleveland, Ohio

THERE is no shortage of lumber nationally. Lumber is piling up at the mills because of the car shortage. Many mills are being forced to curtail production or shut down entirely because of their lack of storage space.

We are optimistic that with the easing of the grain movement and war urgency, box cars may again be available. However, there is little indication that the price situation will show any great change until such time as the heavy order files are cleaned up.

CONTAINERS

SCARCITY AND SCARE BUYING

By W. F. Jones

Gulf Oil Corporation, Pittsburgh, Pa.

THE container situation is fair. No one knows what it will be like tomorrow. The uncertainty of not knowing what is going to happen has caused a lot of scare buying and excess inventory building.

From 5% to 10% of metal containers (drums and pails) are being used by government agencies. If the present trend continues, it will probably go as high as 30% to 40% before mid-1951.

Production of liner board has been curtailed due to increased requirements for weatherproof materials. Some box manufacturers are refusing civilian orders for solid fibre boxes. Shipments of corrugated boxes are now being made on 4 to 6 weeks basis in some areas, and 6 to 8 weeks in others.

Burlap now arriving in this country is that which was purchased in June or July. Supply and price situation looks grim for the balance of the year.

In cotton, there are too many over-eager buyers. Current crop is a short one. Carryover from last season should be enough to supply the needs of this country and our foreign customers. But don't be complacent.

Glass prices are up about 7½%. Buyers are trying to protect themselves with bottles in case restrictions are placed on tinplate.



Betts



Ledebur



Willson



Jones

Simple procedure for a complex job

PURCHASING AT PONTIAC

By Dwight G. Baird



Martin F. Rummel, Pontiac's Purchasing Agent, went to work in the assembly plant of the Oakland Motor Car Company (predecessor of the Pontiac Division) immediately upon his graduation from Michigan State College in 1927. He was transferred to the purchasing department a few months later on follow-up work on tools and dies, became a buyer, and was appointed Purchasing Agent in 1946.

CLOSELY-KNIT organization, simplified procedures, and smooth operation are features of the procurement program at Pontiac Motor Division of General Motors, Pontiac, Michigan.

Headed by M. F. Rummel, purchasing agent, the organization includes two assistant purchasing agents, eight buyers, 20 follow-up men of whom two are supervisors, two outside expeditors, and secretarial and clerical personnel; a total of 56. This is exclusive of the Salvage Department, which is also headed by the purchasing agent.

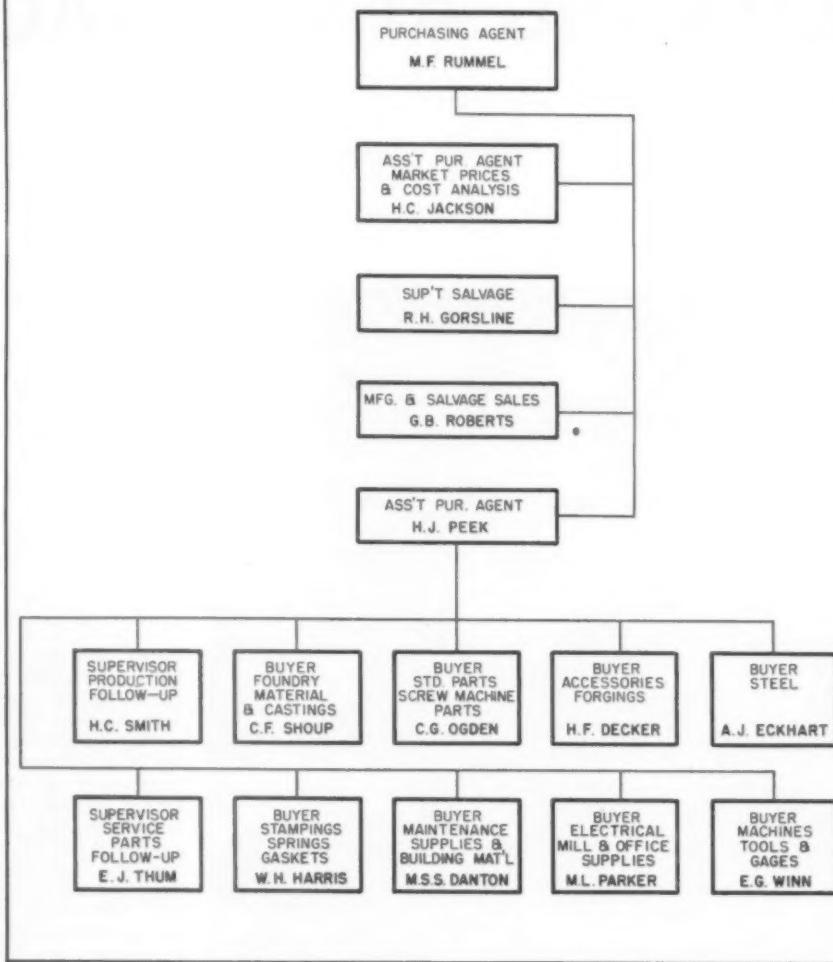
This organization procures all of the parts, materials, supplies, tools, and other items required to keep one of the most modern plants in the automobile industry operating steadily. In doing so, it maintains relations with approximately 25,000 potential suppliers, of whom about 5,000 are regular sources, receives an average of about 150 callers daily, and issues approximately 60,000 purchase orders totaling in excess of \$300,000,000, annually.

In its 1949 model year, Pontiac Motor Division produced 336,466 cars. Production in the first half of

1950 was at a much higher rate—highest in the history of Pontiac—and total production of the 1950 model will be very close to half a million units for the first time in any year.

To build these cars, Pontiac Division procures approximately 1600 different finished production parts and buys the rough stock for about 550 others which are fabricated in its own shop. In addition, the Purchasing Department procures upwards of 15,000 different non-production items and provides about 5,000 service parts.

PURCHASING DEPT ORGANIZATION
PONTIAC MOTOR DIV. G.M.



When shipments against a purchase order are completed, Purchasing notifies Material Control, showing quantities received and indicating that there is no further open commitment on the item.

Pont. 3720			
NOTICE OF PURCHASE ORDER CLOSED			
PART NO. A 505498 B _____ C _____ D _____			
Date	5-1-50		
Part Name	A bar assy.	B	C
Requisition No.	A 823	B	C
	D	Order No. D11111	
A. Quantity Ordered	5,000	Quantity Received	5,100
		Overshipped	100
B. Quantity Ordered		Quantity Received	
		Overshipped	
C. Quantity Ordered		Quantity Received	
		Undershipped	
D. Quantity Ordered		Quantity Received	
		Overshipped	
Source	"A" Company		
Remarks			
Purchasing Department			

Every purchase requires a purchase requisition and a purchase order. Instead of issuing individual purchase requisitions for production parts, however, the Materials Control Department combines these and issues lists of its parts requirements, based upon the approved building schedule, and these serve as the authorization to issue the necessary purchase orders for the parts. Non-production items, of course, require individual purchase requisitions and these are numbered serially.

In selecting sources, Pontiac Division follows the usual custom of the industry in submitting requests for quotations from all potential suppliers at the beginning of each model year. This includes regular sources as well as prospective ones. As quotations are received, each buyer lists these on a quotation card, one card for each part number. When all quotations are in hand, the buyer confers with the purchasing agent and they agree upon sources to be awarded contracts.

This contract is essentially an agreement to purchase a portion of the buyer's requirements of the items listed at the price, and on the terms stated, between the dates specified. Agreements usually are for a period of six months. Terms and conditions are printed on the form; there are 27 standard clauses. This eliminates the necessity of printing them on each purchase order form.

There are only two copies of the purchase order for production parts. The original goes to the supplier and the copy to follow-up.

Each buyer keeps a 5x8 purchase record card and several loose-leaf records. In one binder he keeps copies of all purchase agreements, indexed by suppliers; another contains order work sheets on which he figures requirements and another contains order records. His secretary takes the order work sheets and types the purchase orders, then marks off the quantities ordered. Spaces are provided for requirements, quantity, and cumulative totals.

Follow-up men get a copy of each purchase order and a copy of the parts schedule issued by Materials Control. From these they calculate the requirements of each of the assembly plants and write the shipping releases. Each is provided with an electric calculating machine. Three "Schedule of Shipments" forms are used. One of these is for scheduling shipments from sources to all Pontiac assembly plants, of which there are seven, including the

Purchasing Department

PURCHASE REQUISITION		Req. No.	N ^o 74600																				
QUANTITY	SYMBOL																						
Ship to Plant No. _____		Dock No. _____	Signed _____																				
Purpose _____		Approved _____																					
THIS SPACE FOR PURCHASING DEPT. ONLY																							
Order from _____	_____	_____	_____																				
Order No. _____	_____	_____	_____																				
Date _____	_____	_____	_____																				
Quantity _____	_____	_____	_____																				
Price _____	_____	_____	_____																				
Terms _____	_____	_____	_____																				
F.O.B. _____	_____	_____	_____																				
Ship Spec. _____	_____	_____	_____																				
Via. _____	_____	_____	_____																				
Remarks _____	_____	_____	_____																				
Signed _____																							
<table border="1"> <tr><td>125641 TIRE VALVE DUST CAP 50 CAR QPF. 450556 PUR. FIN. P-S DW</td><td></td><td></td><td></td></tr> <tr><td>144227 MAIN CIRRE ASSY. DASH GROMMET 50 CAR PUR. FIN. P-S DW</td><td></td><td></td><td></td></tr> <tr><td>17e741 RETAINER 50 CAR QPF. 709818 PUR. FIN. P-S DW</td><td></td><td></td><td></td></tr> <tr><td>411143 STRG. KN. SUPT. LOWER ARM BUZPER 50 FRONT SUSP. ASSY. PUR. FIN. P-S DW</td><td></td><td></td><td></td></tr> <tr><td>411146 STRG. KN. SUPT. UPPER ARM SHAFT BUSHING SEAL 50 FRONT SUSP. ASSY.</td><td></td><td></td><td></td></tr> </table>				125641 TIRE VALVE DUST CAP 50 CAR QPF. 450556 PUR. FIN. P-S DW				144227 MAIN CIRRE ASSY. DASH GROMMET 50 CAR PUR. FIN. P-S DW				17e741 RETAINER 50 CAR QPF. 709818 PUR. FIN. P-S DW				411143 STRG. KN. SUPT. LOWER ARM BUZPER 50 FRONT SUSP. ASSY. PUR. FIN. P-S DW				411146 STRG. KN. SUPT. UPPER ARM SHAFT BUSHING SEAL 50 FRONT SUSP. ASSY.			
125641 TIRE VALVE DUST CAP 50 CAR QPF. 450556 PUR. FIN. P-S DW																							
144227 MAIN CIRRE ASSY. DASH GROMMET 50 CAR PUR. FIN. P-S DW																							
17e741 RETAINER 50 CAR QPF. 709818 PUR. FIN. P-S DW																							
411143 STRG. KN. SUPT. LOWER ARM BUZPER 50 FRONT SUSP. ASSY. PUR. FIN. P-S DW																							
411146 STRG. KN. SUPT. UPPER ARM SHAFT BUSHING SEAL 50 FRONT SUSP. ASSY.																							

Requisition for production parts is attached to a parts list based on approved schedule.

main plant; another is used for Pontiac plant only; the third is for scheduling shipments of service parts. Shipping releases usually cover quantities to be shipped in each of the next several weeks, together with a tentative schedule for two or three months thereafter. The latter is intended only to apprise suppliers of likely requirements so that they may procure raw stock accordingly, but they are not authorized to fabricate the parts until they receive detailed shipping instructions.

Follow-up men post their own records, but girls are employed to type shipping releases, correspondence, telegrams, etc., there being about one girl to each three follow-up men. When necessary, buyers' secretaries may be called upon to help out with the clerical work in follow-up, and *vice versa*.

Vendors are furnished shipping notice forms which they mail to the Purchasing Department on the same day they make shipments. This form lists the quantity, Pontiac order No., part No., description, and container No., together with shipping information. Each package must be marked with the buyer's

order No., factory, plant and/or dock No., and purchase order No., and package Nos. must be shown on packing slips, bills of lading, and invoices.

Three copies of the invoice, two priced and one unpriced, must be mailed to the Pontiac Accounting Department not later than the day following shipment. The unpriced copy is checked against receipts and inspection reports and when approved, is authorization to pay the bill.

A serious shortage report is issued at 2:00 p.m. daily.

In these days of unstable labor relations it is especially important to know what the conditions are in suppliers' plants and to take necessary precautions to insure an adequate supply of parts in case of an interruption. To this end, Pontiac buyers maintain a record of labor contract termination dates in their suppliers' plants. These are kept in a date file and 60 days before each supplier's labor contract is due to come up for renewal, the buyer's secretary pulls this supplier's card and places it on the buyer's desk. He then talks with the supplier and inquires about the prospects of uninterrupted production. If these appear to be doubtful, he may return

Purchase Follow-Up Department



ORDER RECORD

ORDER ON CONTRACT						SPECIAL ORDERS			RECEIPTS			
DATE	QUAN.	TOTAL	DATE	QUAN.	TOTAL	DATE	ORD. NO.	QUAN.	TOTAL	DATE	QUAN.	TOTAL

DEPMENTS TO

DEPMENTS TO

DEPMENTS			RECEIPTS			DEPMENTS			RECEIPTS		
DEP.	QUANTITY	TOTAL	DEP.	NUMBER	QUANTITY	DEP.	NUMBER	QUANTITY	DEP.	NUMBER	TOTAL

PART NO. 5249744

PART NAME 607 serial number plate

NAME OF FIRM QUOTING

PRICE

DUE OR PATT. CHARGE

F. O. B.

TERMS

REMARKS

"A" Company

"B" Company

"C" Company

"D" Company

"E" Company

"F" Company

DESCRIPTION

PRODUCTION PURCHASE RECORD

PART NO. 5249744

Car serial number plate

BLANK PRINT

5-5-49

SPEC. SHEET

ORD

NOT

SOURCE OF SUPPLY

CONTRACT

NUMBER

FROM

TO

Per Unit

Base

Net

PRICE

TERMS

F.O.B.

"A" Company

.05 ea.

25 25px.

Our Plt.

DESCRIPTION

PTG. BUMPER TO FRAME BAR ASSY. PURCHASE RECORD CARD

PART NO. 505498

R.H.

CONTRACT YES NO DATE _____ QUANTITY _____ VENDOR _____

DATE

ORDER NO.

QUANTITY

PRICE

DISCOUNT

F. O. B.

TERMS

F.O.B.

2-20-50 D-11111 5,000 1.00 ea.

Our Plt. 25 25px. "A" Company

3-6-50 D-11111 .95 ea. AH-11111

"

TAKE A TIP FROM
PONTIAC'S BUYING

● Extra, unpriced, copy of the vendor's invoice is sent to the receiving department, instead of purchase order copy. Deliveries are checked against billing, and partial receiving reports are eliminated.

● Tickler file shows status of vendor's labor contract, 60 days before Pontiac's purchase contract comes up for renewal. The risk of becoming involved with a supplier's plant strike is minimized.

the card to the file to come up 30 days later and review the situation again.

One of the assistant purchasing agents supervises market price information and cost analysis. He watches trade journals and other sources for market information, and as often as there is an appreciable fluctuation in market prices keeps buyers posted by having card typed

and distributed to buyers on prices of such commodities as tin, copper, lead, zinc, antimony, and others.

Buyers are constantly on the alert to detect any unnecessary specifications that add to the cost of parts and materials. On one occasion, for example, they found that Pontiac Division was specifying a special feature of one part that was not specified by other car manufacturers.

SCHEDULE OF SHIPMENTS FROM: "A" Company Pontiac, Michigan					DATE May 1, 1950 SCHEDULE NO. 3																														
					PONTIAC MOTOR DIVISION, PONTIAC, MICH. GENERAL MOTORS CORPORATION																														
					COPIES TO:																														
<table border="1"> <tr><td>Part No.</td><td>5249744</td></tr> <tr><td>Total Ordered</td><td>2000</td></tr> <tr><td>Total Shipped</td><td>1000</td></tr> <tr><td>Balance Due</td><td>1000</td></tr> <tr><td>Last Shpt.</td><td>3-24-50</td></tr> </table>		Part No.	5249744	Total Ordered	2000	Total Shipped	1000	Balance Due	1000	Last Shpt.	3-24-50	<table border="1"> <tr><td>Part No.</td><td></td></tr> <tr><td>Total Ordered</td><td></td></tr> <tr><td>Total Shipped</td><td></td></tr> <tr><td>Balance Due</td><td></td></tr> <tr><td>Last Shpt.</td><td></td></tr> </table>		Part No.		Total Ordered		Total Shipped		Balance Due		Last Shpt.		<table border="1"> <tr><td>Part No.</td><td></td></tr> <tr><td>Total Ordered</td><td></td></tr> <tr><td>Total Shipped</td><td></td></tr> <tr><td>Balance Due</td><td></td></tr> <tr><td>Last Shpt.</td><td></td></tr> </table>		Part No.		Total Ordered		Total Shipped		Balance Due		Last Shpt.	
Part No.	5249744																																		
Total Ordered	2000																																		
Total Shipped	1000																																		
Balance Due	1000																																		
Last Shpt.	3-24-50																																		
Part No.																																			
Total Ordered																																			
Total Shipped																																			
Balance Due																																			
Last Shpt.																																			
Part No.																																			
Total Ordered																																			
Total Shipped																																			
Balance Due																																			
Last Shpt.																																			
Ship to	Pontiac Plant	8	Pontiac Plant	Pontiac Plant	Pontiac Plant	Pontiac Plant																													
FABRICATE AND SHIP AS FOLLOWS:																																			
DATE	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY																													
6-1	1000																																		
<i>VOID</i>																																			
FUTURE TENTATIVE SCHEDULE DO NOT FABRICATE—Secure Raw Stock Only																																			
<small>This Supersedes all Previous Schedules on PARTS LISTED ONLY. Shipping Notice—Our Form 37011 Must be Mailed in Duplicate the Same Day of Shipment (See Instructions on Other Side)</small>				SIGNED _____	PURCHASING DEPARTMENT																														

This condition was called to the attention of the proper authorities, with the result that the feature was eliminated and a saving of 70¢ per car resulted.

Prior to 1949, Pontiac produced a heavy model and a light model, and a heavy-duty tool was furnished with all cars. Purchasing noted this fact and suggested that a lighter tool be furnished with the lighter cars, whereupon tests were made and as a result, the lighter tool was adopted for all models except the station wagon and a considerable saving was effected.

Three buyers procure non-production items and each has three girls. Requisitions for non-production items originate in central stores, tool stores, and engineering, principally.

Non-production purchase orders bear the symbol *D*. Conditions are printed on the back of the original which goes to the vendor, together with an acknowledgment copy. Quantities are of course specified. In addition to the first two copies which go to the supplier, copies of this purchase order are distributed to purchase follow-up, Accounting, Receiving, the Purchasing Department file, and to Traffic.

Other forms used include an Alteration Notice, Discrepancy Notice, Notice of Purchase Order Closed (used by follow-up department in

advising the Material Control Department when a purchase order is over-shipped or under-shipped and it is desired that the order be closed), a Request for Temporary Deviation in Material Specifications, and a Notice of Shipment in Transit.

All buyers have individual offices

and private secretaries. Secretaries are also in enclosed offices. In most cases, two secretaries occupy an office together between the two buyers to whom they are assigned. In this way, in case a buyer's secretary is out when he is in urgent need of something, her office associate usually can take her place temporarily.

Smooth flow of material is essential to keep the assembly line moving.



Having trouble with lead time and specifications?

How to Buy Custom Built Parts

ANY purchasing agent worth his salary has his own carefully worked out system for the purchase of standard, stock items by catalogue numbers. He has his graphs of raw material prices, his source cards, his cost information, his forms for obtaining bids, and he expects firm delivery dates. He feels that he has the right to expect that dates be kept as promised.

It may seem obvious to say that no customer can expect as fast a delivery of *custom-built parts*, such as the products of our Custom Steel Parts Shop, yet we at Disston find ourselves constantly explaining to purchasing agents why they cannot get their order next week.

Since our problems are certainly shared by any manufacturer of custom-built parts, and since the more the purchasing agent understands those problems the happier everybody will be, a word about our Custom Steel Parts Shop seems in order.

To the average person the name Henry Disston & Sons means *saws*, and saws were indeed the company's first product; they have remained in the forefront of our production and merchandising activities ever since.

But for many years now our Custom Steel Parts Shop has been turning out products made from our own flat steel, hardened, tempered, and machined. These items require special resistance to shocks or abrasion, or finishing to extremely close tolerances. They vary from valve discs about the size of a dime to a press plate nine feet square by 7/16 of an inch thick, or a veneer knife 3/4 of an inch thick, 7½ inches wide, and nearly 18 feet long—a far cry indeed from the Disston saws and files that are in nearly every hardware store. An almost endless list of products—circular knives, fountain blades, paper knives, cylinder jackets, scavenger valves—are made to customers' exact specifications.

We must emphasize again and

By J. F. Wilkinson

Manager of Sales
Industrial Division
Henry Disston & Sons, Inc.
Philadelphia, Pa.

again that the purchasing agent buying such products should not expect overnight delivery. By their very nature, most custom built products are engineered from the beginning. In our case, production often starts with the making of the steel.

When you order a regular stock product from your distributor you touch off a series of inventory moves. Usually your order will be filled from the distributor's stock. His inventory, in turn, will be replenished from the manufacturer's stock. The manufacturer's inventory is built up from his production department, and so it goes, back to the original raw material.

But when you order a specially manufactured product you generally do not get into this chain reaction. There are seldom supporting inventories because in most cases no one could tell what to stock. Hence there will be a sizable time lag between the placing of an order and the delivery of the product.

When we receive your order we must melt the steel in accordance with your requirements. Then it is hardened and tempered to your exact specifications. Then a lengthy series of machining operations finally results in the product you need.

How the P.A. Can Help

There is little we can do to speed up this process without detriment to the quality of the finished article, but there are some things the purchasing agent can do.

First of all, when you are ordering a product which is not standard, wherever possible specify **standard material**. With Disston this means any one of many standard sizes of steel, but whether the material be

steel, plastics, rubber, or whatever, you will obviously cut down some of that time lapse.

Then there are, of course, several possible **inventory control** plans which will make the actual delivery date of less vital importance. The first and simplest consists merely in determining your needs for a custom built part far enough in advance so that the part can be produced and delivered before it is actually needed.

Or you can maintain an automatic inventory and re-order system which keeps parts coming in from the manufacturer as they are used. This is a favorite method where stockroom space is at a premium.

Where the rates of consumption on certain parts are predictable, the distributor often takes over the inventory problem by stocking the parts he knows his customers regularly need and use.

One or a combination of these methods may fit your plant. Your distributor will always be glad to assist you in planning the most efficient and economical system of ordering for your particular case.

A recent case comes to mind when a customer ordered through a distributor a single press plate of a special steel. In order for us, the manufacturer, to quote the best possible price, it was necessary for us to roll three of the plates from a single ingot. Then the obvious question arose—who would inventory the other two plates?

We might have scurried about and found two other customers who could use the identical plates, but in that case it would have been necessary to consider the additional selling expense before accepting the order. Or the distributor would have had to do the same thing.

But in this case the purchasing agent was smart (or lucky enough to have room in his plant). He took delivery on all three plates, thus obtaining the rock-bottom price, and

at the same time anticipating his future requirements for replacements.

Furthermore, the purchasing agent can help his own cause by **care in ordering**. Besides the inevitable time lag between order and delivery of any custom built part, incomplete or faulty ordering will cause additional delays, and these at least the purchasing agent can control. The accompanying check list of things to do and not to do in ordering the custom built parts has evolved from our long experience in receiving and processing such orders.

Some of these points may seem obvious, but every one of them has been violated or overlooked at one time or another by purchasing agents. At the very least, this has meant unnecessary delay while letters went back and forth to straighten out the instructions. At the worst, it has meant the delivery of faulty or unsatisfactory parts.

Teamwork Is Needed

Analysis of these points brings up the controversial question of how much the purchasing agent should depend on his engineering and production men. There is no question that these latter know what they need and want, and the purchasing agent should lean on them for the specifications and for some of the necessary information. But they should not be expected to know the techniques of buying to get what is needed, to get it most economically, and to expedite the transaction.

In the complexities of modern industry, purchasing is a highly specialized function and the purchasing agent should never abdicate his job in favor of the engineer. He cannot abdicate his responsibility. It is clearly a time for perfect teamwork.

The more of the information in the check list that the purchasing agent's order can furnish, the better that order can be handled. Sometimes it is difficult for the buyer, even with the assistance of his engineers, to specify hardness or tolerances best adapted to the job. Then your distributor may be able to help, or the manufacturer will be glad to offer advice, based on the other information you have given him. There's a wealth of experience at your disposal.

If every purchasing agent will take these points to heart, and—if he has ever been guilty of breaking these rules—resolve to sin no more, he will earn the eternal gratitude not only of his suppliers of custom built parts but also of his own production department.

SIX WAYS TO HELP YOUR SUPPLIER



- 1. Don't be stingy with blueprints—they're cheap.** Manufacturers' desires on this point may vary, but at Disston we ask for three blueprints, with maximum tolerances, hardness, and finish clearly indicated on each. If a high finish is required, the micro-inch specification should be indicated.

Why three copies? One of these prints accompanies the job; one goes to the inspector; the third is kept in our files. Sometimes the print attached to the job becomes spoiled because of solutions, greasy hands, or other production hazards; in that case the print from our files is attached to the job, while the inspector's copy eventually becomes the file print. No time is lost sending for another print to finish the job.



- 2. Send samples wherever possible.** Although as a rule these do not show accurate dimensions or exact tolerances, they are very helpful in determining chemical and physical properties such as composition and hardness of steel. It's another aid to the supplier in furnishing exactly what you need.

When samples can be supplied, we always ask for two—one **new** and one **worn**. From the new sample we can determine the hardness and finish of the part. The condition of the worn sample obviously will tell us a great deal about the use to which the part is put. In the case of a slitter, for example, if the worn part is broken it may have been too hard; if it has mushroomed it was probably too soft. We may be able to suggest changes in specifications which will enable the part to give better service.



- 3. A sketch or description will help.** Complete dimensions and maximum tolerances indicated on the sketch are of course essential. Blueprints and samples, as noted in 1 and 2 are preferable to this method, since it is extremely difficult to make such a description really complete, but if these are not available this is an important "second best".



- 4. Tell us how you are going to use the part.** The worn sample helps here, but the more complete the information the better. There's no sense in detective work to ferret out information already known. It always helps the manufacturer to know what work the part is to perform; if it's a knife, what material will it be cutting, etc.



- 5. Tell us about the machine the part is going into.** What type of machine is it? The manufacturer's name, the size of the machine, and all details of its fixtures, will help us to identify and understand the conditions of use and adapt the part to those conditions most effectively.



- 6. What about the part that is being replaced?** Has it given all the service you could expect, or have you been dissatisfied in any way? Whether it was made by us or by a competitor, we would like to know about any trouble it has given. Sometimes a slight change in specification is indicated to give more satisfactory performance and service.



How Standards Help the P. A.

By **Willis S. MacLeod**

Director, Standards Division
Federal Supply Service

This is an abstract of addresses made at the annual meeting of the National Institute of Governmental Purchasing, Milwaukee, October 11, 1950, and the New England Purchasing Conference, Providence, October 27, 1950

WE can no longer cast ourselves as "buyers" in the old accepted sense of the word. We must become "supply men". If we approach the job of purchasing on this basis, we immediately become involved in the determination and establishment of requirements of materials, supplies and equipment.

We must develop simpler and more streamlined methods of requisitioning and placing purchase orders. The most efficient transportation of materials to the using point, both by the common carrier and within the plant itself, becomes a matter of concern to the purchaser because it involves a considerable part of the cost of the material laid down.

The purchasing agent must assist management in determining policies of stocking repetitively used items, the most economical and effective levels of inventory, and the most efficient practices and purchase methods to achieve for his company and for the Government, low cost and efficient supply.

It is important to develop means for full utilization of the materials we have and prompt machinery for disposing of materials no longer needed or useful. Much more attention must be given to our investments in surplus and obsolete materials, and the purchasing agent can and should play a front row position in such a program.

It is not difficult for us to assay and recognize the very great importance that commodity standardization plays in each of these supply operations. It took two world wars for industry to recognize the importance and necessity for standards as a production tool. Without stand-

ardization it would have been impossible to produce the goods required and the standard of living which we as a people have achieved.

If we are to make the best use of standards in supply, it must be accepted that all phases of standardization are involved. The program must be rolled into a package consisting of purchase specifications, a "standards catalog" which classifies and identifies the items in the supply system, and the inspection and testing of materials to determine compliance with purchase standards.

Standardization is achieved in the requirements of purchase specifications by including in such requirements only those types, classes, and varieties of materials which are determined to be the most economical for the service intended. In naming and describing in a uniform manner each item purchased and used, it is possible to compare the types and varieties, and in consequence standardize on those items which the factors of serviceability and cost determine to be the best for the required application. We would be lost without the necessary follow-through to assure ourselves that the materials purchased comply with these standards. However, in inspecting our materials we would be equally lost unless we had standardized inspection methods and procedure. Test methods must similarly be standard so that the producer can measure his production on a comparison basis. Standard sampling is also of great importance to the adequacy of inspection and its cost. The standards program must also establish interchangeability between similar items in the supply system. Substitution cannot be overlooked even in

normal supply because it aids materially in reducing inventory and expediting maintenance.

Standardization may be considered at four levels: (1) in individual companies; (2) by groups—technical societies, trade associations or Government agencies; (3) at the national level; (4) at the international level.

In the early development of individual company standards programs it was the practice to develop special designs as the standard. Analysis will show that invariably a good item of standard manufacture, perhaps slightly modified to meet spe-

PURCHASING BENEFITS FROM STANDARDIZATION

1. Standards simplify and accelerate the planning of supply programs.
2. Standards place purchasing on a competitive basis and permit quantity purchasing at more favorable prices.
3. Standards reduce inventory, and improve service by more effective distribution of materials.
4. Standards provide a basis for uncovering excess stocks, putting them to use, and avoiding further unnecessary purchases.
5. Standards establish criteria for action when materials become obsolete or surplus.
6. Standards inform all levels of supply on better utilization of materials.
7. Standards reduce to a practical minimum the types, varieties, and sizes of materials and supplies needed.

cial conditions of application, adequately serves the purpose. The best approach by far is the one of adapting to company standards the recognized national standards which are so generally available to us in this country. Today technical society, trade association, and government standards offer to the individual company standards man a tremendous resource from which to develop standards most suited to the individual requirements of his company. By using and adapting the work of nationally recognized authorities we take advantage of the extensive technical development behind a common denominator industrial product. This gives the purchaser the benefit of lower unit costs because of increased production volume, and more ready sources of supply. The high costs of specials are eliminated and competition from the buyer's point of view is keener.

N.A.P.A. Pamphlet Praised

It has been gratifying to note the keen interest being taken by the National Association of Purchasing Agents in standards as a program and in the recognition of standardization as an essential element in purchasing. The recent Association pamphlet entitled "Standards: A Procurement Tool" will tell you more in a short space of time about the whys and wherefores of standards in procurement than I could possibly provide you this afternoon. It is significant too that the N.A.P.A. has become a member body of the American Standards Association. Much of the progress we have made in industrial standardization has been the result of efforts of thousands of industry and government people contributing to the clearing house process of the A.S.A. in developing generally accepted voluntary standards.

It is unnecessary to recount the confusion and impedance to production which resulted from differences and variations in the standards of the government and those of industry during World War II. Your companies were right in the middle of those difficulties and many of you who represent smaller businesses found it impossible to participate in war production contracts largely for this reason.

Now that we are faced with increased production to meet defense requirements, you will be interested to learn of the developments which have occurred in standardization in your Government. The Hoover Commission emphasized the urgency

SOME RECENT EXAMPLES OF FEDERAL SPECIFICATIONS WORK

PAINT BRUSHES. A Federal Specification is being prepared for synthetic filament bristles as a substitute for animal bristles in paint and varnish brushes. Use of these bristles will effect savings of about 50% in first cost, plus longer life. Furthermore, it will assure a more reliable supply, since most of the animal bristles used in paint and varnish brushes now come from Russia and China.

STEEL. Recently promulgated Federal Specifications QQ-S-624 and QQ-S-633, for alloy and carbon steel bars (general purpose) supersede Specification QQ-S-671. The new specifications cover chemical limits that are standard in industry and in accordance with AISI specifications. The old specification covered some grades that were non-standard in industry, because chemical limits differed somewhat. This entailed the payment of "extras" for production and also caused some delay in delivery.

X-RAY EQUIPMENT. A Federal Specification for X-Ray Equipment, Radiographic and/or Fluoroscopic. During the past few years, there has been as much advancement in design of such equipment as took place in the preceding 15 to 20 years. The new specification includes all these refinements and improvements. It permits the purchase of a good, relatively cheap, stripped model, with options specified for deluxe equipment suitable for the most highly refined work.

of establishing a uniform system of supply in the Federal Government. Its Task Force pointed out the underlying importance of uniform Federal purchase specifications, the necessity for establishment of a uniform standards supply catalog, and a need for a fully coordinated materials inspection and testing system. Following these recommendations, Congress enacted the Federal Property and Administrative Services Act of 1949, which consolidated in a single agency, reporting to the President, all functions of supply in the Federal Supply Service; the management of buildings and property in the Public Buildings Service; and the Archives record-keeping activities of the government in the National Archives and Records Service. Creation of the agency, General Services Administration, was the most significant single step taken regarding supply in the history of the Government.

The standardization activities of the Government are centralized in

the Standards Division of the Federal Supply Service. We work with all the departments, including the military, in coordinating existing, and developing new, government-side Federal specifications; in the preparation of the Federal Catalog System, on which we have joined with the Munitions Board; and in establishing the basis on which Government departments will exchange inspection services and testing laboratory facilities to avoid duplication.

Many of us have failed to recognize the importance of looking beyond our borders to the international scene in our standardization efforts. We must elevate our thinking to encompass both domestic and international standardization because we are not a self-sufficient nation nor are our domestic markets ample to absorb our production. As we are cooperating for peace, let us cooperate for international standardization which will assist in the exchange of goods and in our common defense.



Clear-cut responsibility, close coordination

Buying for Bigelow

By **G. J. Romieu**,

Assistant Purchasing Agent, Bigelow-Sanford Carpet Co., Thompsonville, Conn.

THE Bigelow-Sanford Carpet Company, founded in 1825, is the oldest and largest carpet and rug manufacturing company in the world. We produce approximately 20% of the carpet and rugs made in this country. Our sales are close

to 100 million dollars a year; purchases represent about 40% of the sales dollar. These purchases include wool, cotton yarn, jute yarn, paper yarn, rayon staple, equipment, and 12,000 miscellaneous items. A year's purchases of major materials

amount to 17,000 carloads, or a line of freight cars 125 miles long. To keep an even flow of materials in such volume, and to keep proper records, our Purchasing Division requires the services of some 40 individuals.

ORGANIZATION

At top management level, the President has an advisory council—or Plans Committee consisting of the 7 Vice Presidents, who meet each week. One of these men is Assistant to the President; the others head up the six Divisions of Sales, Products, Finance, Purchasing, Manufacturing, and Personnel. The Vice President for Purchases is also a member of the Materiel Committee, the Manufacturing Board, and the Products Research Board.

The Purchasing Division is made up of two departments—Wool Purchasing, headed by D. C. Higley, and the General Purchasing Department, headed by W. R. Murray. There are three purchasing locations, each having a purchasing agent—at New York City, Thompsonville, Conn., and Amsterdam, N. Y. The Vice President for Purchases is located at the executive offices in New York City. The General Purchasing Agent has head-

quarters at the Thompsonville plant.

One of the most important purchasing tools we use at Bigelow is our manual of "Purchasing Policies and Principles." Among other clear cut definitions of policy, it states that the purchasing function will be carried out in the Purchasing Division, and not in 14 other departments.

This manual is distributed internally and to all our vendors. We have been told many times by salesmen that they appreciate our manual, as it removes a question in their minds: Should they ask for the Purchasing Agent or for the Engineer?

NEW EQUIPMENT PURCHASES

BIGELOW-SANFORD CARPET COMPANY, Inc. Thompsonville Plant			
NEW EQUIPMENT PROPOSAL			
DATE _____			
<small>THIS IS NOT A PURCHASE ORDER. This form will be used as a request to investigate and evaluate proposed new equipment. The originator of the form will present it to the Plant Manager for approval. If approved it will be submitted to the New Equipment Board for investigation. Upon completion of investigation, this form will be again submitted to the Plant Manager for approval to make out an Appropriation Request, a Request for Purchase or a Shop Order.</small>			
DESCRIPTION AND PURPOSE OF PROJECT:			
<small>It is recommended that an elevator be installed in Fldg. 16 to speed up the handling of rolls of wide goods from the Shearing Department to the Packing Department. This elevator should be large enough to take the widest rolls of carpet and would also be used in transporting wide shear revolvers to the Machine Shop for grinding.</small>			
SUPERINTENDENT		PLANT MANAGER	
<small>Do not fill in below. Information required will be supplied by New Equipment Board.</small>			
QUANTITY	MAJOR EQUIPMENT NECESSARY	QUANTITY	AUXILIARY EQUIPMENT NECESSARY
<small>FOR APPROP. REQUEST FOR PURCH. REQUISITION FOR SHOP ORDER</small>			
APPROVED: PLANT MANAGER			

The General Purchasing Department buys all materials, equipment, and services, with the exception of wool. With such a diversified list of items, we have found it advisable in our procedure to use two methods, one for the purchase of equipment and services, and one for production materials.

In purchasing new equipment, we follow a consulting plan. When the need for a piece of equipment arises, a New Equipment Proposal is made out by the Department Superintendent. This proposal goes to the Plant Manager, who turns it over to the New Equipment Board for study. This board is made up of the requesting Department Superintendent, Manufacturing Engineer, Plant Engineer, Cost Engineer, and Equipment Buyer. A complete study is made as to type, cost, savings, location, flow of material, etc., and a

Address at the New England Purchasing Agents Conference, Providence, R. I., October 27, 1950

recommendation is made to the Plant Manager, who has the final decision.

It is during this discussion stage that the Purchasing Division has much of its work, in the way of market searches and assembling of technical information. The better the service Purchasing gives in this committee, the more it is asked to give.

At the beginning of these discussions, the buyer sends out invitations to bid—a form letter giving a general description of the project. Much detail work is carried on between Purchasing, vendors, and engineers before final specifications are resolved and all bidders are on an equal basis.

To this invitation, the buyer attaches a copy of the Terms and Conditions under which the contract will be placed. We have found that the vendor usually submits his own contract form for signature even though he has your purchase order. His form invariably contains a lot of

fine print covering special terms and conditions for his protection. We feel that on contracts for new equipment, where patents and title are in question, and on contracting work where liabilities and damages, subcontracts, etc., are involved, it is well for us to have all of these terms and conditions written up in a legal document for our protection.

There are 35 clauses in this document, many of which do not apply in each purchase. In discussions with the contractor or vendor, those items that do not apply can easily be crossed out. This is a relatively new form with us, and our experience with it to date has been excellent, both with our vendors and with our own engineers.

If it is determined to buy the equipment, the Plant Manager originates an Appropriation Request, briefly describing the equipment, cost (including installation), and why it is needed. This form must be used on all equipment expenditures.

PRODUCTION MATERIALS

All production materials and some of the major supply items are covered by complete specifications, including test methods. At Bigelow, these specifications are made up by our Product Research and Development Department, in cooperation with Purchasing. Final approval of the specifications in Purchasing is not made until they have been ap-

proved by the major vendors. Co-operation with vendors in setting up specifications can result in considerable savings.

Most Requests for Purchase originate in the Material Control Section of the Manufacturing Division. However, many requests for special items are made out by foremen throughout the plant. All are routed

of \$1,000 or more. It calls for approval by the Division Head (Vice President) and other officers, and, for expenditures over \$10,000, by the President.

After final approvals, the originator of the Appropriation Request makes out a New Equipment Requisition. This is prepared in the Manufacturing Engineering Department, and all necessary specifications and drawings are attached. When this requisition reaches the Purchasing Department, practically all purchasing work has been done; usually all that remains is the awarding of the contract.

This contract is written in legal terms, complete in every detail, with drawings, specifications, terms and conditions attached. It is made up in the same number of copies as our regular purchase order, except that the original and duplicate are both signed by the vendor and the General Purchasing Agent, on file with both parties.

first through the Department Superintendent and screened by Material Control before they are brought to Purchasing. Material Control is responsible for maintaining inventories at predetermined levels, except on major items where forward buying is necessary. The latter items are handled in Purchasing, usually on a monthly order basis.

On these major commodities, predetermined future inventories are established, based on current production schedules and forecasts, and

REQUEST FOR PURCHASE			
		DATE October 15, 1950	
		LOCATION Stores	
Nº 8010			
NOTE: DO NOT PLACE ITEMS OF DIFFERENT CLASSES ON SAME REQUEST. TYPE OR PRINT			
THIS SECTION FOR ORIGINATOR			
ITEM	VENDOR	P.O. NUMBER	P.O. DATE
QUANTITY	UNIT	DESCRIPTION	
50,000	LBS.	8/5 ply tinged cotton yarn wound on 72" cones with tails. Quality is to comply with Bigelow specification Y103B	
DATE NEEDED			
LATE			
EST. COST			
ACCT'S CODE			
QUANTITY	UNIT	DESCRIPTION	
DATE NEEDED			
LATE			
EST. COST			
ACCT'S CODE			
QUANTITY	UNIT	DESCRIPTION	
DATE NEEDED			
LATE			
EST. COST			
ACCT'S CODE			
QUANTITY	UNIT	DESCRIPTION	
DATE NEEDED			
LATE			
EST. COST			
ACCT'S CODE			
QUANTITY	UNIT	DESCRIPTION	
DATE NEEDED			
LATE			
EST. COST			
ACCT'S CODE			
ORIGINATED BY	APPROVED	APPROVED	APPROVED

are approved by the President. Purchasing "holds the bag" on these items, and it is only by close cooperation with Manufacturing, Sales, and a good crystal ball, that production schedules are met and inventory positions maintained. Included among these commodities are wool, cotton yarn, jute yarn, and paper yarn.

The Request for Purchase is divided into two sections. The left side is for use of the originator. Space is allowed for four items per request, with the notation that items of different classes should not be placed on the same form. We have buyers specializing in various types of materials. For instance, our printing buyer is located in New York.



and all requests are forwarded there. If we had a request for printing and a carload of lumber on the same Request for Purchase, it would cause some confusion.

In the left hand box on each item we show quantity, date needed, estimated cost, and an accounting code. The "estimated cost" block has its good and bad points. If the originator fills this in and is later informed that the item will cost double his estimate, he may want to change his plans, and that is good. However, we found ourselves swamped with phone calls asking for prices on hundreds of items so that this block could be filled in, and that was bad. There seemed to be a prevalent feeling that a poor guess was a reflection on the originator's judgment. This was not the case, and a little educational work on the part of the buyer was necessary.

The right hand side of the form is for the buyer's use after he has negotiated the purchase.

The buyer sends out a Quotation Inquiry, made up in triplicate. Two copies go to the vendor; the third is attached to the Request for Purchase and held by the buyer. The vendor completes the form and returns one copy. When all quotations are in and have been analyzed, the buyer completes the right side of the Request for purchase and fills in the vendor's name. It then goes to the purchase order typist who prepares the order, recording the order number and date on the Request. The third copy of the inquiry is then destroyed, and the original is filed.

Information to be typed on the purchase order is in the same sequence as on the Request for Purchase. Orders are made up in 8 copies. The original and acknowledgment copy go to the vendor; copies are distributed internally to Accounts Payable, Receiving, and to the originator. Three copies are retained in the Purchasing Department. One of these goes immediately into the permanent numerical file; one goes into an open numerical file; and the third goes to a follow-up clerk who maintains a tickler file of open orders.

The Receiving Department records incoming goods on a Receiving Report, copy of which comes to Purchasing. The follow-up clerk posts these to the numerical open file. When the order is complete, this order copy is filed alphabetically and the follow-up copy is destroyed.

In our company, inspectors are attached to the Quality Control Department of the Manufacturing Division, and reports are made to the Plant Manager, Production Control Superintendent, Accounting, and Purchasing. We receive four copies of these reports of acceptance or rejection, one for our file, and the others for sending to vendors upon request.

Payment of invoices is handled entirely by the Accounting Department at each plant, where they are matched with purchase orders, receiving and inspection reports. Any discrepancy in quantity or price is referred back to the Purchasing Department.

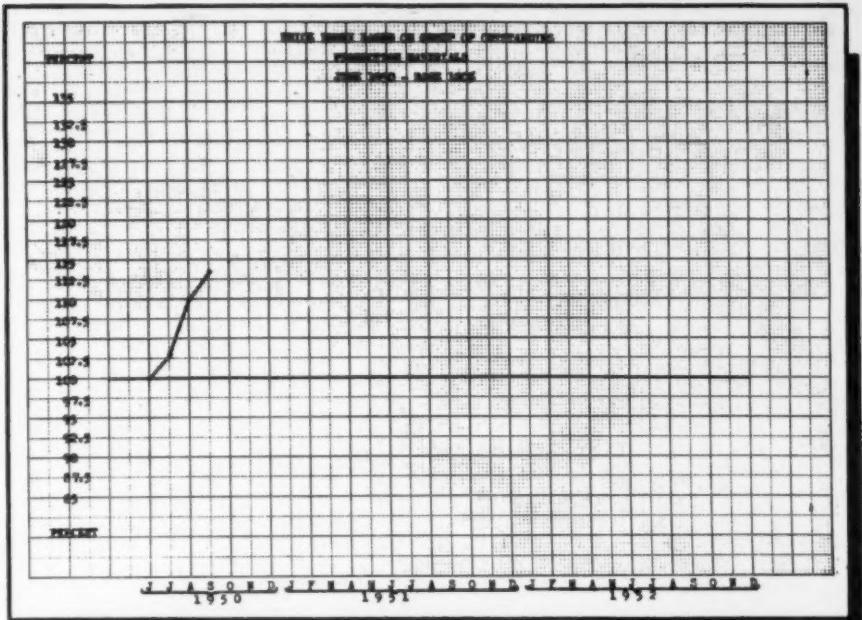
COMMODITY RESEARCH

We have in our New York office a Commodity Research Department, whose job it is to accumulate statistical information on commodities affecting Bigelow. This information is collected from standard statistical sources and combined into a report for internal use.

One of the charts developed in this department shows the trend in wool prices over the past several years. This chart was recently used by our Sales Manager in one of his letters to the trade to show a comparison of the increase in wool prices and the increase in carpet prices.

It has been suggested that we should try to work out a composite chart on all major items handled by Purchasing. With such a diversity of items, and sometimes divergent price movements, it is difficult to determine a significant over-all trend.

We have worked up an index by listing those items making up the bulk of our purchases. We then determined the yearly purchases of



each item, and priced each at the June 15, 1950, level. Each month thereafter, each buyer reprices his items on the list, and by figuring the new total money value against the original total, we show a percentage

increase or decrease as the case may be. Our experience so far has been limited, but we feel that such an index will be useful, not only to ourselves, but also to other divisions of the company.

A Century of Purchasing Experience

Fred E. Haker, Wisconsin farm boy who made good in big business, in a big way, retired from active service with Allis-Chalmers Mfg. Co., Milwaukee, on October 28th, after 50 years of purchasing work in that organization. When he joined the company as a stenographer, the purchasing department consisted of three persons. Since 1940 he has headed a staff of 360 employees, responsible for purchases averaging 9½ million dollars a month.



M. F. Tucker, Purchasing Agent for the Robinson Clay Product Co., Akron, Ohio, has completed 50 years of continuous service with that company. His first job with the Robinson organization, back in September, 1900, was as a factory office clerk. He grew with the company, in successive assignments of greater responsibility, leading to his present position, directing purchases for 10 plants located throughout Ohio and Pennsylvania, from the Akron office.

Purchasing Policies for Today

By E. B. Gallaher, Clover Manufacturing Co., Norwalk, Conn.

Presented at New England Purchasing Conference, Providence, October 27, 1950

Put Your Money into Goods

OUR money has steadily lost value over the past ten years, to the tune of about 50%; in a year or two, it will likely be worth considerably less. Even at this late date, it is more desirable to place our money in real things than to

have it in cash or in any investment that is redeemed in cash, such as bonds, mortgages, insurance, etc.

For instance, if you invested, a few years ago, 7,500 real dollars in 10-year government bonds, at maturity you would get 10,000 50-

cent dollars, or \$5,000 in buying power; while, if you had invested \$7,500 in a house ten years ago, it would likely be worth \$15,000 today. This is elementary, but it applies to all business transactions as well.

In other words, merchandise and equipment are more desirable to hold than cash, because they have a future earning capacity.

Quick Turnover is Important

WE can make just as much profit in a falling-price market as in a rising-price market, only we must employ different methods. We must buy and sell quickly, take a small

mark-up, then repeat the operation, with rapid turnover.

Our problem is the same today, only it is our money that must be "turned over" rapidly because it is

losing value. If we buy our materials and pay our labor, sell our goods and make our profit all in 50-cent dollars, the purchasing power of our earnings will remain the same providing we complete the transaction before the dollar further loses value.

attractive to the buyer, but better for the seller.

Long-term bank borrowings, while not advised unless necessary, could also prove profitable. You would be borrowing at today's dollar value, but when you come to pay off a loan you might be paying with a cheaper dollar.

past year.

I suggest doing business with several suppliers, of each important commodity, *as soon as possible*. Try to select suppliers from several sections of the country. Divide your orders as nearly even among those suppliers as prudence dictates. Last, but not least, select both large and medium-size concerns which produce goods of equal quality.

concerns were kept in business during the war only because they had the good sense and foresight to make arrangements with smaller suppliers while there was still time to do so.

I would urge you to canvass the entire field in each industry that supplies your critical materials, to make definite agreements with several of the sound, smaller units, and begin at once to divide up your orders.

Forward Purchasing and Financing

THE buyer in today's markets can earn money for his concern by purchasing standard, usable materials which he knows will be consumed in the final product, because these materials, as consumed, will

likely cost more to replace.

Reasonably long-term buying, at a firm price, is sound for the purchaser at present, but not so good for the seller. Long-term buying at "prices at time of delivery" is less

Spread Your Orders for Safety

I HAVE always strongly advocated having several supply sources as a matter of common prudence. We never know when a supplier will be tied up with a strike or a heavy snowstorm and place us in a hole for urgent materials. Today there is a new risk, for your suppliers too are having trouble getting

their crude materials.

When turned down by a regular supplier, you turn to another source. If you have not bought there before, you are likely to be told they are not taking on any new accounts. If you have been buying intermittently, you may get a small "quota" based on your purchases over the

Patronize the Smaller Supplier

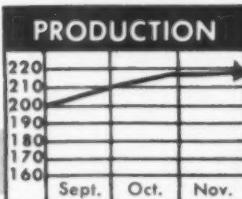
MANY of us have been buying from large concerns because we have felt their products must be better as their facilities are greater. As a matter of fact, the good medium-size units in an industry must have "something on the ball" to be able to compete with the big fellows and build up a business.

Heavy government orders will

soon be placed with large plants. These will be "preference" orders because they are for rearming, and shipments to others will have to be still further cut.

The smaller units, while given fringe orders by the big fellows and by government, will not be tied up to nearly the same extent. But their capacity is limited. Many sizable

Where We Stand



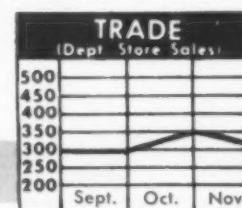
Today's Business Trends As Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	YEAR
Industrial Production Index	1935-39=100	213	211	166	+ 0.9	+28.3
Steel Production (Weekly)	000 net tons	1,981	1,967	1,058	+ 0.7	+87.2
Electric Power Production (Weekly)	mil KWH	6,551	6,514	5,435	+ 0.6	+20.5
Bituminous Coal Production (Weekly)	000 net tons	11,375	11,415	2,679	- 0.3	+324.6*
Auto, Truck & Bus Output (Weekly)	units	167,582	171,597	112,838	- 2.3	+48.5
Petroleum Output (Weekly)	000 bbls.	5,823	5,803	5,071	+ 0.3	+14.8

*Calculated from strike period



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	YEAR
All Commodities (BLS)	1926=100	170.0	168.4	151.6	+ 1.0	+12.1
Farm Products	1926=100	181.3	177.9	157.3	+ 1.9	+15.3
Metals & Metal Products	1926=100	180.6	177.5	167.4	+ 1.7	+ 7.9
Building Materials	1926=100	217.9	220.0	189.7	- 0.9	+14.9
Steel Billets (Pittsburgh)	net ton	\$53.00	\$53.00	\$52.00	0	+ 1.9
Steel Scrap, heavy melting, Pitts.	ton	43.75	43.75	31.75	0	+37.8
Copper, electrolytic	lb.	.24 1/2	.24 1/2	.18 1/2	0	+32.4
Cotton, mid. 15/16"	lb.	.43 1/4	.39 1/4	.3042	+10.2	+42.1
Rubber (Rib-smoked sheets)	lb.	.80	.62	.16 %	+29.0	+381.9
Wheat, No. 2	bu.	2.51	2.44 1/2	2.48 7/8	+ 2.7	+ 0.9



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	YEAR
Dept. Store Sales Index (Fed. Res.)	1935-39=100	315	326	315	- 3.3	0
Commercial Failures (Dun & Bradstreet)	no.	181	154	196	+17.5	- 7.6
Freight Carloadings	cars	862,184	863,676	578,981	- 0.2	+48.9

FINANCE

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	YEAR
Stock Prices (Standard & Poor's)	1926=100	170.0	157.7	151.6	+ 7.8	+12.1
Bank Clearings (New York)	mil \$	6,553	6,558	4,487	- 0.1	+46.0
Federal Reserve Credit	mil \$	19,853	20,044	18,185	- 1.0	+ 9.1
Currency in Circulation	mil \$	27,388	27,339	27,219	+ 0.2	+ 0.6

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

**Value of Manufacturers' Sales
Seasonally Adjusted
(Millions of Dollars)**

All Manufacturing	17,621	15,798	21,329	21,751	r 22,766	21,131
Durable goods	7,335	6,167	9,569	9,315	r 10,060	9,494
Iron and Steel	1,796	1,123	2,328	2,234	r 2,471	2,390
Nonferrous metals	440	380	738	742	r 606	603
Electrical machinery	759	721	999	1,005	r 1,129	1,117
General machinery (exc. elec.)	1,130	1,051	1,382	1,426	r 1,554	1,507
Motor vehicles & equipment	1,406	1,193	1,880	1,646	r 1,716	1,441
Transportation equipment (exc. motor vehicles)	267	279	400	490	r 410	391
Lumber and timber products	454	429	606	557	r 695	646
Furniture & finished lumber products	348	328	396	384	r 485	434
Stone, clay & glass products	397	364	459	440	r 540	512
Nondurable goods	10,286	9,631	11,760	12,436	r 12,706	11,638
Food and kindred products	2,790	2,685	3,463	3,605	r 3,257	3,011
Beverages	459	415	707	701	r 649	458
Tobacco products	271	250	287	300	299	254
Textile-mill products	1,069	994	1,242	1,356	r 1,544	1,354
Apparel	985	830	548	748	r 1,256	967
Leather and products	285	261	328	349	r 381	330
Paper and allied products	520	507	670	660	r 633	624
Printing and publishing	585	512	664	653	r 615	648
Chemicals and allied products	1,237	1,163	1,407	1,458	r 1,667	1,570
Petroleum and coal products	1,561	1,528	1,763	1,866	r 1,669	1,638
Rubber products	272	255	367	442	r 457	n.a.

**Book Value of Manufacturers' Inventories
Seasonally Adjusted
(Millions of Dollars)**

All Manufacturing	29,320	28,923	32,014	31,834	r 29,736	30,696
Durable goods	13,716	13,373	14,378	14,321	r 13,736	13,947
Iron and steel	3,051	2,916	3,324	3,348	r 3,191	3,254
Nonferrous metals	968	956	1,011	992	r 965	940
Electrical machinery	1,550	1,509	1,698	1,679	r 1,630	1,655
General machinery (exc. elec.)	3,261	3,194	3,158	3,124	r 3,228	3,284
Motor vehicles & equipment	1,781	1,711	1,823	1,818	r 1,651	1,682
Transportation equip. (except motor vehicles)	838	809	622	657	r 663	677
Lumber and timber products	510	546	662	649	r 550	570
Furniture & finished lumber products	591	576	849	832	r 664	678
Stone, clay & glass products	544	529	517	518	r 534	531
Nondurable goods	15,604	15,550	17,636	17,513	r 16,000	16,749
Food and kindred products	2,750	2,799	3,177	2,999	r 2,820	2,975
Beverages	1,062	1,027	1,119	1,180	r 1,048	1,137
Tobacco products	1,553	1,541	1,695	1,678	r 1,562	1,681
Textile-mill products	1,939	1,950	2,608	2,601	r 2,285	2,400
Apparel	1,228	1,223	1,580	1,660	r 1,455	1,520
Leather and products	516	511	681	650	r 573	591
Paper and allied products	681	669	749	741	r 671	677
Printing and publishing	525	525	640	621	r 593	625
Chemicals and allied products	2,093	2,084	2,168	2,177	r 2,043	2,124
Petroleum and coal products	2,281	2,282	2,220	2,272	r 2,050	2,100
Rubber products	538	517	607	559	r 483	n.a.

Manufacturers' New Orders (Unadjusted)

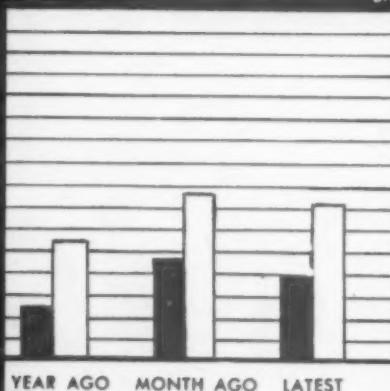
All Manufacturing	18,172	17,151	22,121	24,328	r 27,134	23,835
Durable Goods	7,099	6,892	10,510	11,953	r 13,863	11,560
Non-Durable Goods	11,074	10,259	11,611	12,376	r 13,271	12,275

r — revised n.a. — not available

SALES, INVENTORIES AND INDUSTRIAL PRODUCTION

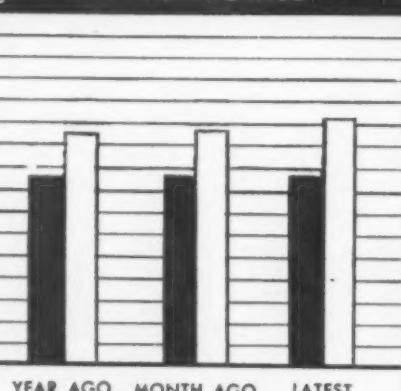
SALES

Billions of \$



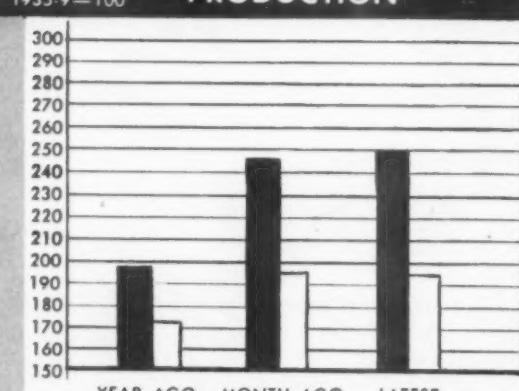
INVENTORIES

1935-9=100



PRODUCTION

1935-9=100

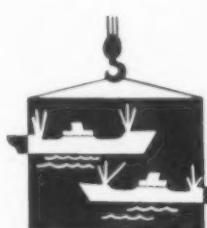


DURABLE GOODS

NON-DURABLE GOODS

Straws in the Trade Wind

● Management understanding of how to deal with the complex problems of production in a war economy has put the United States "at least a year nearer full-scale mobilization than at any time prior to World War II", in the opinion of William L. Batt, president of SKF Industries, Inc. "Our nation's industrial potential and its ability to endeavor to meet the demand of military requirements in the event of emergency is as much in advance of 1940, 1941 and early 1942 as those hectic months, in turn, were ahead of 1916-17," he said.



● A new record for imports into the United States was set in September. Foreign purchases in that period totaled \$857,700,000. Exports also rose sharply during the month to \$910,400,000. During August, the amount of imports had exceeded that of exports for the first time.

● Commercial, industrial and agricultural loans increased in all districts of the Federal Reserve System during the second week in November. The loans went up by a total of \$193,000,000 at all reporting member banks.

● A cut of as much as 20% in General Electric's production of civilian goods may be forced by restrictions on materials, according to Charles E. Wilson, president of the company . . . The Radio-Television Manufacturers Association has predicted a "sharp cut" in production of radios and television sets before 1951 because of the shortage of metals. Lack of cobalt is causing the most difficulty, with shortages of nickel, aluminum and copper also threatening normal operations.

● The Committee for Economic Development has submitted a tax program to meet the present emergency. It is based on the theory of "pay-as-you-go" until a long-range policy can be set up. The committee has proposed a "defense profits tax" at a flat rate of 15% on total corporate profits, in addition to a basic tax of 38% on corporations. This would supplant the present rate of 45% on earnings over \$25,000. It also asks a 5% increase in individual income taxes, and additional excise taxes. Meanwhile, business opposition was rising to the Administration's call for an excess profits tax through a 75% levy on profits exceeding 75% of a corporation's average annual earnings during its three most profitable years from 1946 through 1949. (Corporate profits for the past eight years are shown in a chart at the end of this section.)

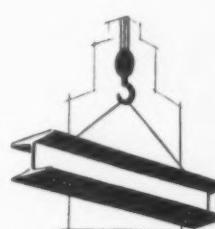
● Frank Folsom, president of the Radio Corporation of America has recommended the appointment of a "procurement general" who would have the power to coordinate and control policy for all Government and defense buying. Mr. Folsom was director of purchases in the Office of Production Management in World War II.

● Four important subsidiaries of the United States Steel Corporation have been merged into a single operating company known as the United States Steel Co. The company will be composed of: Carnegie-Illinois Steel Corp., United States Steel Corp. of Delaware, H. C. Frick Coke Co. and United States Coal & Coke Co.

● The Air Force is reported to be conducting research projects at Wright Field, Ohio, on making entire airplanes from titanium. Titanium alloys with a tensile strength as high as 200,000 pounds per square inch have been developed, according to Air Force officers, and some special parts of planes made of them are now in production.

● Jones & Laughlin, Pittsburgh, Pa., the country's fourth largest steel producer plans to expand its facilities for the production of tin plate by about 60%. The company now produces approximately 6% of the total United States output.

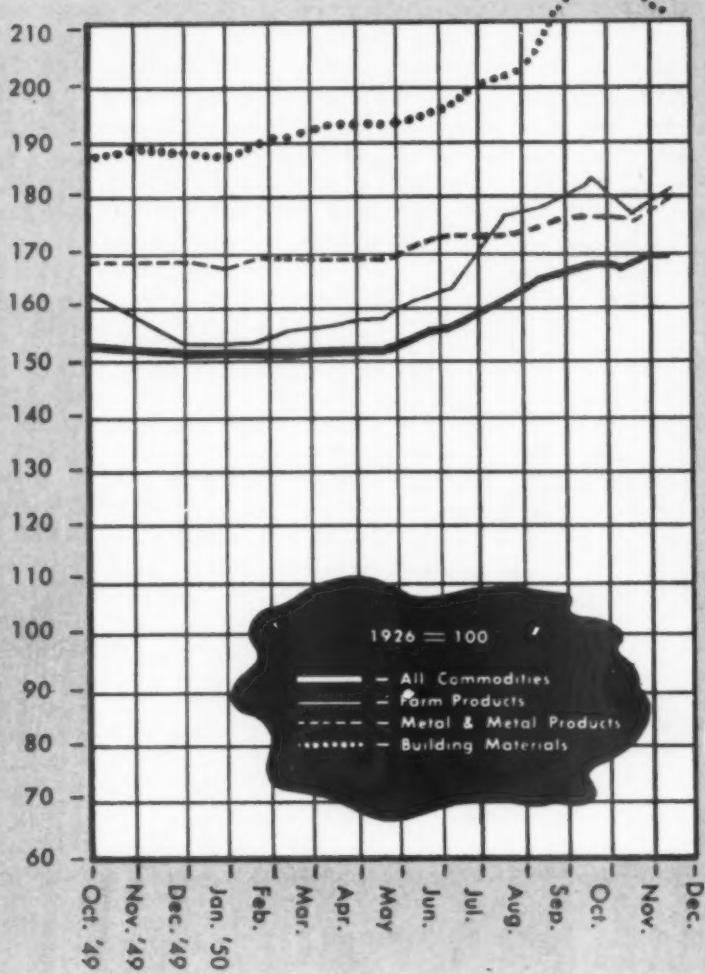
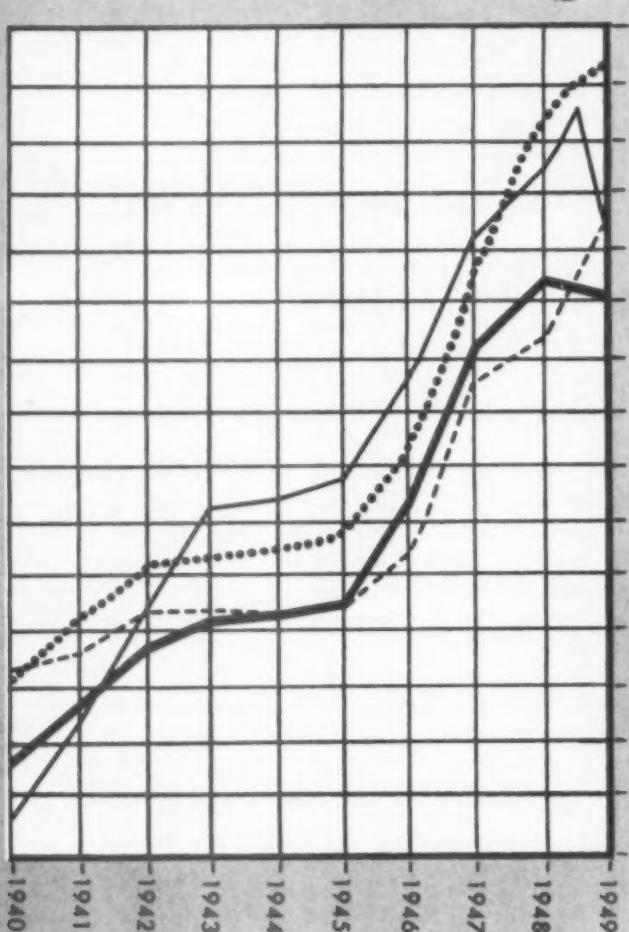
● Republic Steel Corporation will expand its ingot capacity by 672,000 net tons at a cost of about \$75,000,-000. Republic, third largest steel-producing company in the country, plans an immediate start on the expansion, which is expected to be completed in early 1952 . . . The Empire Steel Company, Mansfield, Ohio, is planning a \$10,000,000 expansion program that is expected to increase ingot capacity 20%, and change the plant to a heavy hot-roll strip-coil operation.



● A 19% decline in building and engineering operations during 1951 from the record highs of this year has been predicted by F. W. Dodge Corporation in its annual forecast. Even with the cutback, it is pointed out, expenditures for the year will be "measurably greater" than in any other year except 1950.

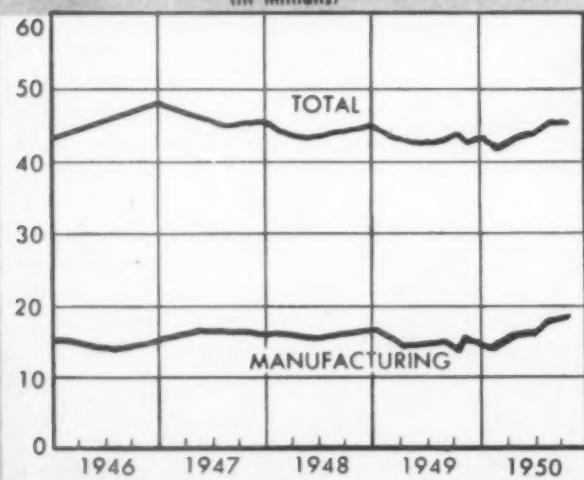
● The Associated Press recently reported that a survey showed 60% of the nation's farmers belonging to one or more co-operatives, which do nearly ten billion dollars worth of business yearly. The number of farmers participating in co-operatives has almost doubled in 20 years.

The Price Picture

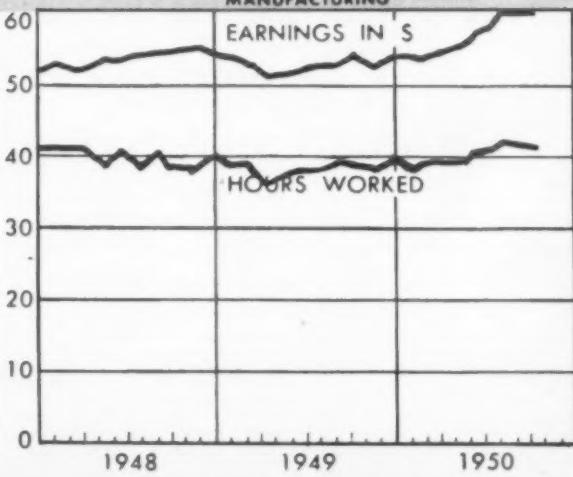


Employment & Earnings

NON-AGRICULTURAL EMPLOYMENT
(in millions)



AVERAGE WEEKLY EARNINGS AND HOURS
MANUFACTURING



SOURCE: U.S. DEPT. OF LABOR

The Pulse of Business

As the usual indicators continued pointing to more inflation and greater shortages in both materials and men, business and industry were looking two ways at once. In this direction were good business and a prolongation of demand. In the other were the threat of controls, heavy taxes and the crippling effects of scarcities.

With personal income at a record level and weekly earnings moving up, there appeared to be a ready market for all the goods industry could produce. And industry has been producing in extraordinary amounts both for the military and for civilians, with estimated production index now at 213, a postwar high.

During the past month or two a certain amount of consumer resistance developed with some braking effect on the inflationary surge. Mild weather cut down retail sales, and price increases and credit restrictions slowed considerably the panic-buying that developed immediately after the Korean war broke. It is felt now, however, that the pendulum will swing back again under pressure of increased income, heavy Christmas buying, and the desire to obtain such items as household appliances before material shortages force a cutback in their production. Considered only from this view, the prospects for business were cheerful.

Business sentiment generally appeared to be against the Administration's proposed excess profits tax as a means of helping finance the free world's fight against Communism and control inflation at the same time. It was said that such a tax would discourage expansion, throttle smaller firms whose earnings in the 1946-1949 base period were low (the tax plan calls for a 75% levy on defense earnings over 75% of the corporation's average annual income in that period), encourage inflation, and leave a backlog of claims similar to the thousands that still exist from World War II. A number of alternative plans were being submitted, the most notable being that put forth by the Committee for Economic Development, which called for a flat 15% "defense tax"

on corporate profits, over and above a basic tax of 38% (as opposed to the current rate of 45% on earnings over \$45,000).

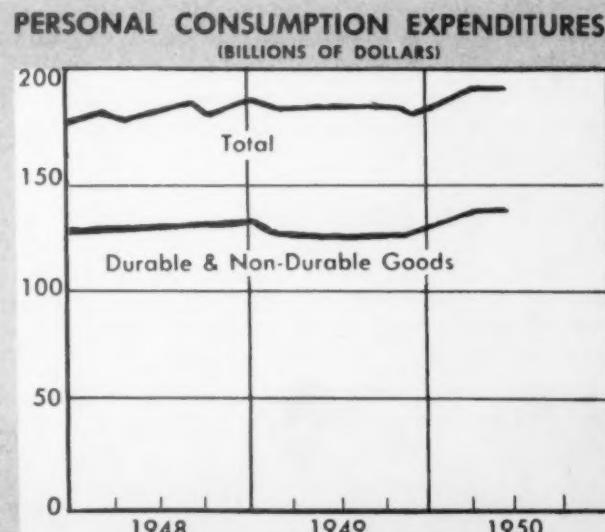
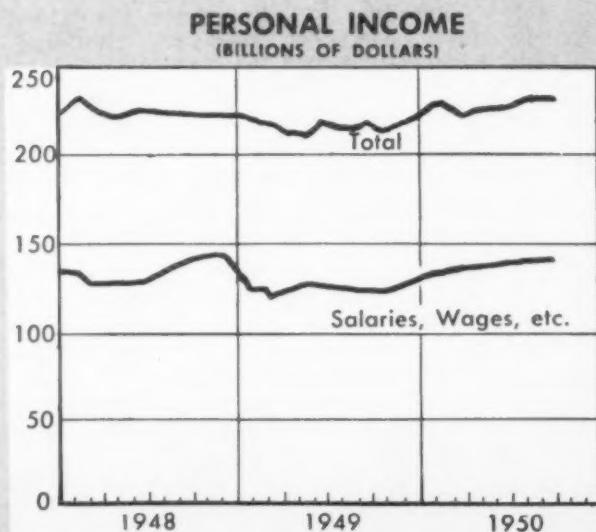
The President asked for consideration of the bill at the "short session" of the present Congress that was to open on November 27. But it appeared doubtful that any real action will be taken until the new session of Congress opens during the first week of 1951. And in that session opposition is expected to be strong, perhaps strong enough to force the adoption of different tax programs to finance defense.

Developments in the Korean war pointed up the danger in assuming that the Communist threat is only a sporadic one that can be met by alternate positions of alertness and relaxation. Fortunately, it appears that most of the country is physically and psychologically prepared to stay on the alert for some time to come. The intervention of the Chinese Red Army is an extremely serious occurrence, but considered in the light of what we now know about Russia's aims and methods a logical, and not unexpected one. The big problem, of course, is to try to assess just how far the satellite and its master want to go. At the first powerful thrust of the Chinese Reds, many responsible people thought World War III had just about begun, and our only possible step was immediate mobilization. Such sentiments are not considered hysterical or ill-advised, but the reluctance of the Chinese to press their original attack has led to the hope that perhaps the Communists are not really anxious to start an all-out war.

If so, we might still be able to contain the aggressors without assuming the terrible burdens, and the terrible inherent dangers let it be said, of complete mobilization.

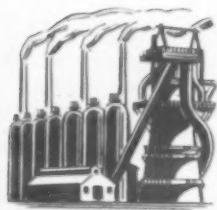
At any rate, it becomes clearer and clearer as time goes by that we must look forward to being something of a garrison state if we wish to maintain our existence. Previous estimates of how much military spending was going to affect our economy have been increasing steadily. While no exact figures are available it seems evident that civilian needs are really going to feel the pinch before long. As one NPA official put it recently, we will be "well into an economy of austerity" by next summer, through curtailment in the uses of essential materials in "non-essential civilian goods".

Personal Income & Expenditures



Materials & Markets

STEEL



While the controversy rages over the adequacy of steel capacity and what should be done for the future, production continues at record high levels, demand can be described only as frantic, and prices appear to be headed upward anywhere from \$5 to \$10 a ton.

Production during the month of October totaled 8,718,978 tons, with mills working at 102% of capacity, for an all-time record. Production during the month of November was climbing even higher, with the output at mid-month at 102.7% of capacity, equivalent to 1,980,000 tons of steel ingots and casting for the entire industry in one week.

Steel users continue to clamor for all they can get, but the disappointments are going to grow in number and volume. The requirements of the defense program, slow in being known, are increasing all the time. Nobody seems to know just how big they will get, but it is generally assumed they will cut deeply into whatever supplies might be available for civilian use. Talk of the necessity for mandatory controls on production and distribution of steel is heard regularly and it is considered in trade circles only as a matter of time before the Government steps in to channel the steel to where it is most needed. In an attempt to insure steel for small business firms, the NPA has ordered steel producers to allot to their warehouse customers proportionate percentages of each steel product, based on average monthly shipments during the first nine months of this year. These allotments are to come out of steel production available after the mills have filled defense requirements. Such allotments are to be in addition to shipments made to steel warehouses to cover their defense rated orders.

Benjamin F. Fairless, president of United States Steel, recently stated that increased prices of raw materials have added \$4 a ton in costs to the company's total steel shipments. A 15-cents-per-hour raise for the steel-workers would add about \$6 a ton, he said. The implication drawn in trade quarters is that a successful wage drive for the union will result in increases in the price of steel up to \$10 a ton.

NON-FERROUS METALS

The Government has already stepped into the non-ferrous picture in a big way by limiting the use of aluminum in civilian goods, with similar moves being expected in other vital metals, particularly copper, soon.

Under the new NPA ruling, aluminum users making non-defense material are limited within each quarter

to not more than 65% of the average quarterly use of aluminum during the first six months of 1950. The order, which applies only to users of aluminum products and forms, will go into effect January 1, 1951. In December of this year, aluminum users are allowed 100% of their average monthly consumption during the first half of the year. Businesses using less than 1,000 pounds of aluminum a year are exempted from the order. Production of primary aluminum during the third quarter of this year reached the highest level since the second quarter of 1944, according to the Aluminum Association, but still was not enough to supply all the metal desired by civilian users after meeting mounting military needs.

Despite record high production the demand for copper is continuing at a tremendous pace. Deliveries of refined copper in October amounted to 121,806 tons, and refined stocks at the end of the month totaled 56,945 tons, as compared with 58,748 tons the previous month.



Current production from domestic mines is 2,700 tons a day, just short of the 2,721 tons a day average set in 1944. The increasing tightness of the red metal, and its great importance to the defense effort have led trade circles to believe that drastic restrictions on its use in civilian goods will soon be issued by NPA. Some feel that the cut will be greater than the 35% already announced for aluminum.

The zinc shortage appears too be growing more acute with controls also expected soon. A measure of the situation is the announcement by Inland Steel Company that because of the tight supply, aggravated by Government stockpiling, that its production of galvanized sheets would have to be geared to receipts of zinc. The resulting cuts would vary, but would reach as much as 50% of capacity operations, the company announced. Zinc production from United States mines totaled 54,269 tons in September, 1,845 less than in August. The figures are from the Bureau of Mines.

An official of the Magnesium Company of America told the Magnesium Association that within a few years the supply of the metal would grow from the present 60,000,000 pounds yearly to 240,000,000 pounds. 75,000,000 pounds will be available in 1951, and 102,000,000 pounds in 1952, he stated. The present "temporary shortage" is due to lack of capacity for metal conversion to meet expanding military demands, he declared. The situation will be relieved by June, he said.

Tin prices have been fluctuating wildly because of the tense international situation and the feverish speculative activity that has resulted. Some quarters have felt that

The Reconstruction Finance Corporation was planning to take over the sale of the metal at fixed prices as during the last war. The price settled at \$1.32 during the fourth week of November.

CHEMICALS



Despite high production and heavy imports, the benzol supply situation remains very tight, running behind demand. Little relief is in sight, since the synthetic rubber program, now expanding rapidly requires large volumes of benzol. Heavy sufferers from the shortage are the plastics and pharmaceutical industries. Other coal tar chemicals in tight supply are phenol, toluol, and xylol, and the short range outlook for them is also rather dim.

Members of the alkali-chlorine industry advisory committee have recommended to the National Production Authority that a plan be set up to distribute "DO" rated priority orders for caustic soda, soda ash, and chlorine equitably among domestic producers of the chemicals. The committee said that the rating system is causing some confusion and disruption of regular customer relationships in the industry. Conditions are said to be improving in both the soda ash and caustic soda fields, although demand is very heavy and supplies are slow in getting back to normal. The industry representatives said that barring unforeseen large new demands for soda ash and caustic soda, there should be little difficulty in supplying both military and non-military requirements for the immediate future. Chlorine demand is still ahead of production and the shortage is expected to continue into the near future.

RUBBER

The Government's attempt to cut down rubber consumption in civilian goods made little progress in September according to latest figures. Consumption amounted to 108,464 long tons, which was only 6,212 tons less than the record high set in August. However, the campaign is expected to be much more successful in coming months. Rubber prices have remained high under the impact of international developments, but the expanding synthetic program in this country is expected to have a depressing effect. Prices in all world markets were dropping as this was written. Meanwhile, the Department of Commerce announced that world production of new rubber, both natural and synthetic, had passed consumption during September, reversing an eight-month trend. John L. Collyer, president of B. F. Goodrich Co., issued a seven-point plan to lift this country's rubber stocks. Among his suggestions: increase

synthetic rubber production from the current rate of 570,000 tons a year to 920,000 tons a year.

MISCELLANEOUS

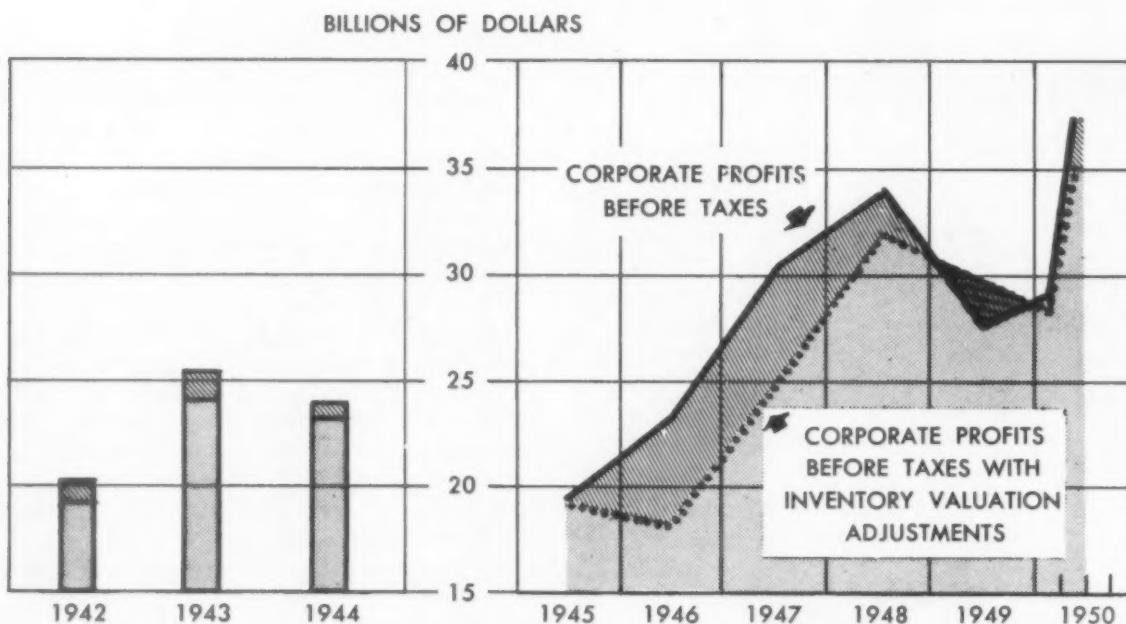
A shortage in polystyrene plastic molding powder is threatening the existence of one-third of the nine hundred plastic injection molders throughout the United States, according to the Society of the Plastics Industry. Demand for plastic products made from polystyrene has been heavy, but the molding powder was put under allocation in October. Meanwhile, the expansion of the synthetic rubber industry, which requires huge amounts of styrene, from which polystyrene plastics are made, has made the pinch greater. Among the industries that will be affected adversely by these conditions in the plastics industry, according to the Society, are those in the refrigeration, radio and television, housewares products, and toy fields . . . The Department of Agriculture's estimate of the 1950 cotton crop has been raised slightly from 9,869,000 bales forecast a month ago to 9,945,000 bales. This compares with 16,128,000 bales produced in 1949 and the 11,599,000 bales average produced during 1939-48. Meanwhile, cotton prices went up on the news that the Department had increased the export limit by 1,135,000 bales for the eight months ending March 31, 1951. Cotton men had been hoping that previous export restrictions would remain, thereby helping to ease the domestic shortage. The latest movement in prices has aroused fears that Government controls on cotton textiles are not far off . . . The Government of India has increased the export duty on burlap from 350 to 750 rupees per long ton. The new duty is



equivalent to an increase of \$1.80 per hundred yards of 40-inch 7 1/2 ounce burlap and an increase of \$2.40 on 100 yards of the 40-inch 10-ounce construction. No provision has been made for exemption from the increased duty of shipments made after October 21 of this year, under existing burlap contracts . . . Paper production is keeping at record levels and backlog of orders in practically all grades continue to build up. Meanwhile, Rep. Emmanuel Celler, chairman of the House Judiciary Committee, who warned newsprint producers last month against further price increases, has asked the Attorney General to bring an anti-trust suit against the companies for "making uniform price increases". After one or two changes, the average increase per ton for all the major companies is now about \$6 . . . Rising production costs have forced increases in ferro-alloy prices by Electro Metallurgical Division of Union Carbide and Carbon Corporation. The revisions amount to about 6.5% on a weighted average basis.

NATIONAL TRENDS:

CORPORATE PROFITS BEFORE TAXES



SOURCE: U.S. DEPARTMENT OF COMMERCE, OFFICE OF BUSINESS ECONOMICS

Industry group	[Millions of dollars]							
	1948		1949				1950	
	Quarterly average	First quarter	Second quarter	Third quarter	Fourth quarter	Quarterly average	First quarter	Second quarter
Corporate profits before taxes								
All industries, total ¹	8,470	7,167	6,571	6,983	6,904	6,906	7,334	9,300
Mining	370	296	268	210	234	252	216	310
Manufacturing	4,770	4,011	3,307	3,754	3,591	3,666	4,029	5,214
Durable-goods industries ²	2,238	2,067	1,717	1,913	1,764	1,865	2,112	2,972
Nondurable-goods industries ²	2,532	1,944	1,590	1,841	1,827	1,801	1,917	2,242
Transportation	446	223	360	394	340	329	208	413
Communications and public utilities	380	454	417	411	467	437	558	545
All other industries ²	2,504	2,183	2,219	2,214	2,272	2,222	2,323	2,818
Corporate profits after taxes								
All industries, total ¹	5,228	4,406	4,078	4,297	4,243	4,256	4,304	5,552
Mining	261	228	205	161	179	193	164	223
Manufacturing	2,974	2,494	2,066	2,334	2,231	2,281	2,406	3,190
Durable-goods industries ²	1,355	1,241	1,037	1,159	1,063	1,125	1,223	1,779
Nondurable-goods industries ²	1,619	1,253	1,029	1,175	1,168	1,156	1,183	1,411
Transportation	248	119	205	222	185	183	102	221
Communications and public utilities	228	270	247	244	273	259	310	297
All other industries ²	1,517	1,295	1,355	1,336	1,375	1,340	1,322	1,621

More Value for the Tax Dollar is Public Buyers' Theme

WITH a record registration of 750, the 1950 Annual Conference and Products Exhibit of the National Institute of Governmental Purchasing was held in Milwaukee, Wis., birthplace of NIGP, where it was incorporated in 1944. The Conference was held in the Hotel Schroeder on October 8, 9, 10 and 11.

Theme of the Conference was "More Value for the Tax Dollar". Growing shortages and the shrinking purchasing power of the dollar constitute major problems facing city, county and state purchasing men today.

The diversified program, discussions, and the interest and enthusiasm of those attending the sessions evidenced, as stated by Colonel Paul V. Betters, Executive Director, U. S. Conference of Mayors, that the governmental buyers now have a dynamic organization, and, as stated by Leonard Bessman, Assistant Attorney General, State of Wisconsin, that the NIGP is one of the few groups whose activities "are devoted entirely to the public interest."

A special feature of the Conference was an inspiring address by Fleet Admiral Chester W. Nimitz, Special Advisor to the Secretary-General of the United Nations, on the international situation in the Far East, at the conclusion of which he said that the



Fleet Admiral Chester Nimitz—"The world is moving toward peace."



President-elect Michael M. Donohue
P. A., Allegheny County, Pa.

nations of the world are now entering an era of peace. "With the world again headed in the right direction", he said, "I feel sure it will be many years before atomic bombs are dropped in American cities. I do not honestly expect World War III in my time." He warned, however, that "we must remain strong to avert further acts of aggression."

Joseph W. Nicholson, Purchasing Agent, City of Milwaukee, was General Conference Chairman; Maurice S. Park, Dane County Purchasing Agent, Madison, Wis., was Program Chairman, and Miss Frances Swadener of the A. B. Dick Co., Chicago, was chairman of the Exhibitors Advisory Committee. The products exhibit featured more than 80 individual exhibits ranging from plastic tableware to business machines and automotive equipment.

A practical feature of the Conference was the distribution of "NIGP Committee Reports for 1950", the compilation including the following: Purchasing Organi-

zation & Procedures; Stores and Accounting; Standards and Tests—traffic paint, braided water hose, soaps and detergents, building cleaning materials for specific purposes; Model statutory or home rule charter provision relating to contracts; Research and Procedures; Federal Excise Taxes; Fire Hose.

Communications of greetings and goodwill were received from President Harry S. Truman, the Purchasing Officers Association of Great Britain, the Purchasing Officers Association of France, and the Governor of Wisconsin. President Truman said in part:

"Those of you who are buying for the requirements of civilian agencies in Federal, state or local governmental units have a double responsibility. You must see to it that those things which are necessary to the efficient operation of your governmental units are available when and where they are needed. But you must also help the defense effort by holding buying to

1951—Washington

1952—Chicago

The Sixth Annual Conference and Exhibit of NIGP will be held in Washington, D.C., October 21-24, 1951. The 1952 Conference will be held in Chicago.

BE IT RESOLVED:

(Important resolutions adopted at the Fifth Annual Conference, National Institute of Governmental Purchasing, October 11, 1950)

OCR REPRESENTATION. The Institute calls upon the National Production Authority and its Office of Civilian Requirements to establish immediately in the Office of Civilian Requirements a Division of State and Local Governments, to concern itself with the supply needs of state and local governments as they are now or may be affected by the further development of economic controls. The Institute urges the Administrator of NPA to establish an Advisory Board to assist the proposed Division in any priorities and allocations programs which may affect these units of government directly or indirectly. Such an Advisory Board should be broadly representative of the interests of state and local governments, and should include qualified public purchasing executives. The Executive Director of the Institute is designated to represent NIGP in liaison with the Administrator of NPA.

PRICES. State and local governments are experiencing a shrinkage in the value of the tax dollar because of spiralling prices. These governmental units, with fixed sources of income, are finding it increasingly difficult to obtain necessary supplies, materials and equipment for their operations because of this situation. The Institute deplores this situation and recognizes the seriousness of the problem which it creates.

ESCALATOR CLAUSES. The Institute favors firm prices in public purchasing, but should designate a committee to draft model escalator clauses for use when and if needed, for the guidance of public buyers and the protection of taxpayers.

minimum amounts, especially of those items using critical materials."

The conference was honored by the presence of T. L. Garner, chairman of the Purchasing Officers Association of Great Britain; Martin Marques, purchasing representative of the Government of Puerto Rico; and Dr. Gustav Giere, City Finance Officer and Director of Purchasing of the City of Duisburg, Germany. Dr. Giere gave a brief talk on municipal buying in cities in West Germany, revealing that the problems of purchasing officers there are very similar to those faced by American governmental buyers.

1950-51 Officers

The following officers and directors were elected for the 1950-51 association year:

President, Michael M. Donohue, Purchasing Agent, County of Allegheny, Pittsburgh, Pa.

Vice Presidents. John Splain, Commissioner of Purchasing, City of New York, and Arthur B. Gathright, Director of Purchasing & Printing, Commonwealth of Virginia, Richmond, Va.

Treasurer, John W. Huffman, Purchasing Agent, Richmond, Va.

Directors: Albert A. Parent, City of Lewistown, Me.; B. L. Gill, City of Madison, Wis.; Thomas D. Beckum, City of Augusta, Ga.; William F. Hornbuckle, Kansas City, Mo.; James E. Baker, City of Grand Rapids, Mich.; Robert W. Sollinger, County of Onondaga, Syracuse, N. Y.; John W. Huffman, City of Richmond, Va.

Following "Welcome to Mil-

Col. Paul V. Betters (left) receives the Institute's first Distinguished Service Award from Mayor F. P. Zeidler of Milwaukee, in recognition of his vision and encouragement in the founding of NIGP.

waukee" by Joseph W. Nicholson, City Purchasing Agent, and Virgil H. Hurless, City Comptroller, NIGP President John Ward presented his report on "More Value for the Tax Dollar."

"Our greatest gains this year", said Mr. Ward, "have been in the field of cutting red tape and the elimination of certain practices alleged to be peculiar to government buying." He declared that industry is dissatisfied generally with the number of legal forms that must be analyzed and absorbed before bids for public business are made out and contracts consummated, and some feel that governmental contracts in most cases are lopsided in favor of the governmental unit; further, many companies feel that because of political manipulations they are unable to compete on certain municipal requirements, and complaint is made that governments are too slow in paying their bills.

Among other things, he emphasized that hand-to-mouth buying should be avoided, and that buyers should consolidate their requirements, thus reducing paper work and earning the advantage of quantity discounts. He also urged that standard specifications be set up for items of common usage, in for common use items, the installation of commodity record systems, and the development of a good salvage system.

Commenting upon contract between governmental buyers and suppliers, he said, "To us, the salesman is the company," and suggested that industry school its representatives in some of the formalities involved in submitting bids to government.

The Monday afternoon session was given over to a panel and round table discussion on "The





Dr. Christoph Giere,
City Finance Officer,
Duisberg, Germany,
found public purchasing problems similar the world over.

Distinguished visitors. Executive Director Albert H. Hall with Martin Marques, Jr., of Puerto Rico (left) and T. L. Garner of Leicester, England (right).



Functions and Value of a Testing Laboratory in Relation to a Modern Purchasing Department", with Robert A. Burmeister, Materials Engineer, City of Milwaukee, as leader. Participants in this discussion were R. S. Saddoris, President of the Milwaukee Chapter, American Society for Quality Control, R. L. Hermann, Quality Control Division of the Ladish Co., Milwaukee, and Harry A. McArdle, Chief of Purchase, New York Housing Authority.

Mr. Saddoris said that while he did not think it necessary that purchasing men should be intimately familiar with the technicalities of quality control, they should make it their business to find out what is back of quality control, because those suppliers who are using quality control will in the main be the better suppliers.

Following this discussion, a short period was given over to "Tips on Buying", led by Vice President Michael M. Donohue.

"The Effects of Economic Controls on Public Buying under the Defense Production Act of 1950" was the subject of a paper by A. J. Holm, City Purchasing Agent, Los

Angeles, Calif. "Voluntary agreements are being used at present to allocate scarce materials to the more essential needs," he said. "Supplies and equipment are generally available, although some are difficult to buy and delivery schedules are getting longer. Escalator clauses are again beginning to appear in our bids. It is my suggestion that the policy be adopted now to carefully screen all contemplated projects to eliminate those that are not definitely essential to the health and safety of the community. Our production capacities will be strained to the limit before we see normal times again.

"Black and gray markets thrive under conditions that are developing. In fact they are extremely active now, so the sooner effective priority, allocation and price regulations are issued, the better it will be for the civilian consumer. These markets are so widespread and so conspicuous it is difficult to understand why controls have not already been issued to stop them."

Following Mr. Holm's talk, A. L. McMillan, Director of Purchases, City of New York, presented a report by John Splain, Commissioner

of Purchase, City of New York, who was unable to attend the Conference, in which Mr. Splain recommended the appointment of a committee of procuring authorities for the purpose of making forceful representations in Washington to bring about such a grade of priorities for governmental services as will permit continued operation and take care of anticipated operations in accordance with national recommendations on Civil Defense.

Defense Order Priorities: Nelson A. Miller, Office of Civilian Requirements, National Production Authority, Washington, explained that NPA has provided a system of Defense Order Ratings for defense procurement, identified by a two-digit numeral system to designate the different procurement programs which, under the law, must be given a first priority by the producers of materials and manufacturers of finished goods and equipment.

The NPA, said Mr. Miller, assumes the responsibility of seeing that materials needed for defense production get a green light. Other activities of NPA will be secondary, such as the curtailment of production of less essential finished goods



Retiring President John F. Ward and Mrs. Ward shed the cares of office after a strenuous and successful year.

Alderman Fred Stefan of Milwaukee entertained by sketching caricatures of delegates at the pre-Conference dinner. The model in this photograph is Miss Amy Deutcher, City P. A. of Long Beach, California.





Head table at luncheon meeting.

which are fabricated from the critical materials. An Office of Civilian Requirements is provided for in the organization of NPA, though a program for the office has not yet been determined.

Commodity Standardization: Willlis S. MacLeod, Director, Standards Division, Federal Supply Service, Washington, next presented a paper on "Commodity Standardization—Its Value to Public Agencies", which is reported in this issue of PURCHASING.

Buying Shelf Items: William J. McKinney, State Purchasing Agent, Springfield, Ill., in a brief paper on reducing red tape by using purchase orders instead of formal contracts for shelf items, declared that a purchase order, properly executed, is sufficient when contracting for commodities or materials that are readily available for delivery from stock, or a product of standard and continuous manufacture. He stressed that the purchase order must be in agreement with the price, terms and conditions as set forth in the bidder's proposal. The formal contract, which is more costly to prepare and requires considerably more time and red tape to execute, is not desirable for use in such procurement.

Out-of-Town Bidders: "How to Handle Complaints from Local Merchants when Contracts are Awarded to Out-of-town Firms who are the Lowest Bidders" was the subject of a paper by B. L. Gill, Madison, Wis. Citing the Institute's code of ethics, he said that conformance to the code, and refusal to compromise, would meet with public approval as well as that of bidders. Expressing the opinion that there is considerable merit in the contention of home-town bidders that they are entitled to more con-

sideration than out-of-town bidders, he said that under certain circumstances it should be a factor in deciding the successful bidder; however, care should be exercised in determining how much weight should be assigned to this factor. He said that his department never hesitated to award a contract to an out-of-town bidder if the price differential were substantial.

"In general, I think the answer to this vexing problem may be largely solved through good public

Cash Discounts: Luther H. Clayton, Purchasing Agent, University of Wisconsin, stated that the answer to the problem of discounts lay in complete cooperation between buyer, departmental executives, and vendors. Commitments by his department exceed \$10,000,000 annually and the four buyers in the department handle more than 60,000 purchase orders per year. Except for food (which is purchased in quantities sufficient to serve 22,000 meals daily), receiving reports are not used. When foods are delivered, receiving report is completed by receiving unit and immediately sent to the invoice-auditing section of the purchasing office. Invoices are received weekly from vendors, audited, and approved for voucherizing within 24 hours. Where discounts are involved, a large bold type red form is attached to the face of the invoice. Though receiving report is not used in other fields of purchase, the same type of cash discount signal is used, and record made showing that invoice is due back for voucherizing three days prior to the expiration of the discount terms.

The Invoice Auditing Division records all possible discounts and all taken discounts. Should a de-



Roland M. Brennan
(D. C. Purchasing
Officer) greets Miss
Mary E. O'Connor,
Director of Purchase,
N. Y. State.

relations," he continued. "By refusing to compromise our ethical principles we can firmly establish the reputation that our decisions are fair, unbiased, and always represent a conscientious effort to protect the public's interest." He expressed the opinion that political pressure can be successfully counteracted by a clear explanation of policies and a stout defense of them.

partment or a division lose a discount, report is made to the Director of Business and Finance, the Controller, and the dean of the particular school. During the last fiscal year, the department was able to take 98.5% of the possible discounts, totalling \$35,000.

A. E. Axtell, City Manager, Kenosha, Wis., declared that the purchasing department in his city "has more than paid for itself by

savings made. When we set up a central purchasing department and stores department 27 years ago, we quickly discovered the importance thereof. The city not only saves the time of the employees but saves many dollars as well, due to the fact that purchases are made in volume at the right time and at the right price, and most important, the articles wanted are on hand when needed."

Collusive Price Fixing: Leonard Bessman, Assistant Attorney-General and Chief of the Anti-Trust Division, State of Wisconsin, in the course of a talk on collusive price fixing, anti-trust laws and "Fair Trade" laws as they affect public buying, stated that many students of our economy have reluctantly concluded that competition in price is vanishing from American business; that when businessmen agree upon prices a controlled price, as distinguished from a market price, is established. Almost invariably, he continued, agreements result in higher prices, for the very purpose of the agreement is to remove the possibility of price reductions.

"Collusive bidding may take different forms. Bidders may agree upon prices and submit uniform bids, or they may select one member of the group to submit a lower bid than other bidders in a given transaction with the understanding that each will be given an opportunity to be the lowest bidder in future bids.

"Mere uniformity of price does not in itself establish conspiracy," he continued. "In the sale of standardized commodities, price uniformity may come about through the need to reduce prices to meet the competition of a low cost seller. But the United States Supreme Court has recognized that because



Coast to Coast: N. B. Henson (Hartford, Conn.), Leo Weil, (Cleveland), W. S. MacLeod (Washington), and A. J. Holm (Los Angeles) check the report of the Standards and Tests Committee.

there is a tendency toward uniformity of price in the sale of standardized commodities it is the more important that opportunities for price competition be preserved.

"The threat to the system of free enterprise comes not only from businessmen seeking to evade the anti-trust laws. Pressure exerted by those anxious to escape competition has brought about the enactment of laws which are anti-competitive. Chief among these is the Miller-Tydings Act which has its counterpart in the statutes of Wisconsin and many other states. This act permits the owner of a trademarked commodity to fix the price at which it will be sold by retailers. As a consequence, retailers may not compete in the prices at which they resell that commodity.

"There is a strong tendency on the part of the industry to avoid independent price action. Ingenious devices are employed to circumvent the spirit of the law if not its letter.

The gravity of anti-trust violation has not been generally stressed. Violation of the anti-trust laws threatens the very foundation of our economic institutions and causes inevitable injury to large groups of citizens.

"The nation is today arming once more to assure that no foreign power will be able to impose upon it a different political and economic system. But, if indifference to the prohibitions of the anti-trust laws continues, we shall ourselves have changed our economy. Some economists have reluctantly concluded that we are in a period of transition from a free economy to private collectivism. They point out that it must, if unchecked, result in some form of state socialism.

"Inevitably fixed prices are unreasonably high prices. The consumer will suffer hardship and he will demand government control. We shall then be well on the road to a regimented economy."

DISCUSSION LEADERS—



M. S. Park



B. L. Gill



W. J. McKinney



A. E. Axtell

How far can you rely on a seller's guarantee?

Watch Your Warranties!

By Leo T. Parker

DURING the early summer of 22 this year the writer traveled Mid-Western and Western States, and had the opportunity and pleasure of conversing personally with numerous readers of PURCHASING, including purchasing agents, owners and officials of manufacturing plants. A majority of them had perplexing legal problems.

In this article I shall answer legal questions uppermost in the minds of a majority of these readers. They were interested primarily in variations of the law relating to guarantees, and a legal rule by which purchasers can be assured that sellers "remain" liable on guarantees believed to exist at the time the sale contract was made. In other words, a simple question presented by many, and whose formulation covers interesting law, is: What can a purchaser do to protect himself against invalidity of a guarantee he was led to believe was valid by acts, words, or statements of the seller?

In order to answer this question, I have collected numerous new and leading higher court decisions, hereinafter cited, which clearly illustrates various phases of the law on this subject.

"As Is" Contract

A common form of sale contract which very frequently confuses purchasers contains an "as is" clause. Hence an important legal question for attention of all classifications of purchasers is: If a buyer and seller of merchandise make a written sale contract containing an "as is" clause, *after* the seller made a definite verbal guarantee, is this guarantee obliterated or cancelled?

In other words, is a seller's verbal guarantee cancelled if the testimony shows that the buyer signed a writ-

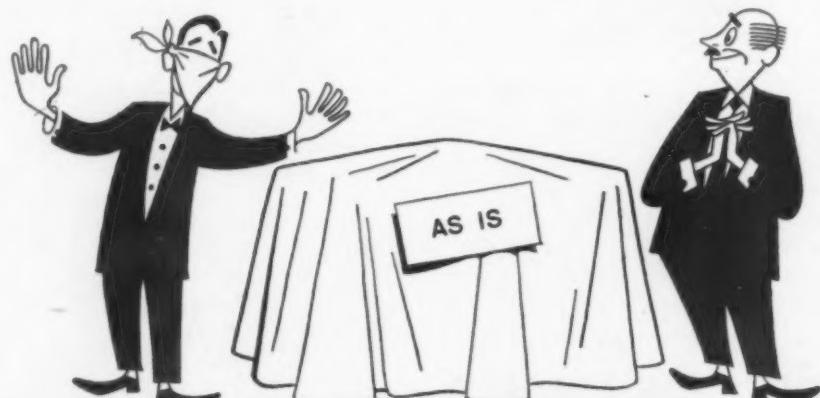
ten contract of sale containing an "as is" or similar clause?

The answer is *Yes*.

For example, in *Findley v. Downing*, 54 S. E. (2d) 716, the testimony showed facts, as follows: A salesman showed a prospective buyer certain equipment and guaranteed that the engine was reconditioned and in new condition, having new rings, inserts, and bearings. The buyer purchased the equipment, so he testified later, in reliance on this warranty. In less than two weeks, the equipment developed serious trouble. The purchaser sued the seller for damages.

the higher court held that the buyer could not recover any damages, saying:

"The written bill of sale shows that as a part of the contract plaintiff (buyer) took it 'as is' and this means without any warranty as to physical or mechanical condition or soundness. . . The very words 'as is', taking this contract as a whole, would cause a person to know that the seller meant to say to the buyer, 'You look the article over, and, if you buy it, you do so at your risk'. It means much the same as saying, 'If you buy you take the article with all its faults.'"



WHEN MERCHANTISE IS SOLD (AS IS) THE BUYER ACCEPTS FULL RESPONSIBILITY

During the trial the counsel for the seller proved that immediately after the salesman had made the above mentioned verbal guarantee he handed the buyer a written contract which contained a clause to the effect that the equipment was being sold "as is". The buyer *signed this contract*.

In view of the testimony that the buyer had signed the written contract containing an "as is" clause,

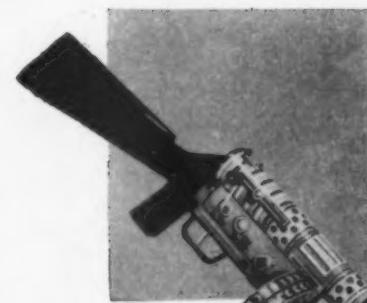
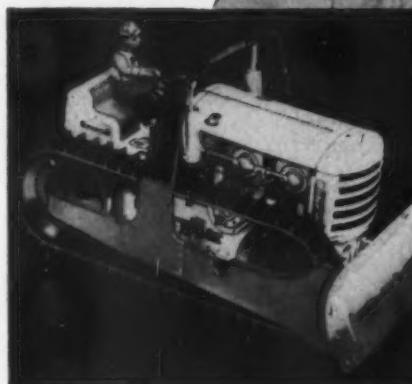
For comparison, see *Williams v. McClain*, 176 So. 717; and *Regula v. Gerber*, 70 N. E. (2d) 662. The latter court said:

"We think that the words 'as is' when contained in a contract for the sale of personalty amount to an express limitation of warranties and that unless the written contract itself contains express warranties the article is sold unwarranted."

Obviously this rule of law is ap-

Here are American Quality Springs

in Action!



the spring's the thing!



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO • COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK



AMERICAN QUALITY SPRINGS

UNITED STATES STEEL

plicable to all contracts of sale for all kinds of merchandise and products.

The higher courts generally conclude that if a purchaser signs a written contract containing an "as is" clause, or other statement limiting the seller's responsibility for a previously made warranty, the purchaser's subsequent testimony relating to the verbal guarantee is either exaggerated, undependable, or falsified. In other words, both a jury and higher court may very logically conclude that a buyer does not expect a warranty on merchandise if he signs a written contract in which he relieves the seller from all responsibility on a guarantee.

Broadly Construed

Modern higher courts consistently hold that an "as is" contract shall be broadly construed to mean that the purchaser takes the subject of the sale with all its defects and "short-comings".

For example, in Roby Company v. Cade, 158 So. 840, the higher court held:

"Use of 'as is' implies that the buyer takes a chance in making the purchase. It seems to imply the thought that the buyer is taking delivery of goods in some way defective, and upon the express condition that he must trust to his own examination."

HOW GOOD ARE THE FOLLOWING GUARANTEES?

A verbal guarantee made before contract is signed?

A verbal guarantee made after contract is signed?

A verbal guarantee at variance with contract terms?

A guarantee that product has been manufactured in accord with accepted commercial practice?

A guarantee of equipment when installation is made by the purchaser?

A guarantee on contracts that are indefinite as to grade, size, and/or terms?

A guarantee based on grade designations common in a trade or industry?

or contemporaneous representations or statements can not be allowed to add to, take from, or vary the written instrument.

Also, see Albany v. Henderson, 31 S. E. (2d) 20, 36; and Bullard v. Brewer, 45 S. E. 711.

These courts held that written evidence is of higher proof than oral. And in all cases where the parties have reduced their contract, agreement, or stipulation to writing, and assented thereto, it is the best evidence. In other words, parol contemporaneous evidence is inadmissible generally to contradict or vary

ties at the time a sale contract is made control the legal rights and liabilities of the parties in a subsequent suit. Hence, although a written contract contains an absolute guarantee, yet another clause in the same written contract may have precedence and thereby cancel and render void the written guarantee. This always is so, if the court decides that such was the original intention of the contracting parties. And this also is so although the purchaser bitterly denies that he intended to relieve the seller from responsibility of the original guarantee.

Intentions Are Controlling

For illustration, in Despatch v. Rauenhorst, 40 N. W. (2d) 73, the testimony showed facts, as follows: A manufacturer entered into a written contract in which it sold to a purchaser a "dryer" to be used for drying seed corn. The purchase price was \$4,356. The dryer is a metal cabinet 20 feet long, 8 feet 6 inches wide, and 11 feet 6 inches high. In one end of the cabinet is an oil burner and a combustion unit. At the other end is a fan operated by a 25-horsepower motor. In the burner-combustion unit oil is burned, mixed with air, and then forced toward the fan which forces the heated-combusted mixture out of the dryer into ducts where it travels to bins for drying seed corn.

The dryer was warranted in the written contract to produce sufficient hot air having a temperature of 110 degrees Fahrenheit when the outside temperature was not less than 40 degrees Fahrenheit, to dry during 24 hours, 1,500 bushels of seed corn having not more than 26% moisture.



A CONTRACT THAT DOESN'T DEFINE THE AGREEMENT
IS NOT ENFORCEABLE

Therefore, it is well settled law that where the testimony shows that contracting parties signed a written contract which appears to be a complete and certain agreement it will, in the absence of fraud, accident, or mistake, be conclusively presumed that the writing contains the entire contract, and parol evidence of prior

the terms of a valid written instrument.

Motto to purchasers: Don't sign a written contract which disclaims the seller's verbal guarantee, if you expect or want a valid guarantee, either implied or expressed.

Another important point of law is: The apparent intentions of the par-

signs of

CMP
THINSTEEL

warehouse service

These three steel warehouses normally carry in stock the complete range of cold rolled strip steel specialties made by The Cold Metal Products Company, including low carbon and high carbon analyses, tempered spring steel and stainless grades in the 300 and 400 series. Supply problems are now very difficult. Currently, shortages exist in some grades and sizes, but within the limits of inventory possibilities strip steel fabricators continue to find justification for the descriptive phrase long identifying all Precision produced CMP products—"More feet per pound—more finished parts per ton."

Kenilworth
Steel co.



IN THE EAST IT'S

THE KENILWORTH STEEL CO.

Located in the metropolitan New York area for quick service throughout the east. 750 Boulevard, Kenilworth, N. J. Phones: New York—COrtlandt 7-2427; New Jersey—UNionville 2-6900.

PRECISION STEEL
WAREHOUSE, INC.



IN THE MIDWEST IT'S

PRECISION STEEL WAREHOUSE, INC.

Well known in the Chicago district for good service and careful attention to customers' requirements. 4409-4425 West Kinzie Street, Chicago 24, Illinois. Phone: COlumbus 1-2700.

the Cold Metal Products co.
of California

6600 MCKINLEY AVENUE • LOS ANGELES

IN THE FAR WEST AND PACIFIC COAST IT'S THE COLD METAL PRODUCTS CO. OF CALIFORNIA

On the west coast the only specialists in light gauge precision cold rolled strip. 6600 McKinley Avenue, Los Angeles, California. Phone: PLesant 3-1291.



the Cold Metal Products co.
YOUNGSTOWN 1, OHIO

NEW YORK • CHICAGO • DETROIT • ST. LOUIS • INDIANAPOLIS • LOS ANGELES

The written contract also contained this clause: "Contractor assumes no liability for consequential damages of any kind which result from the use of misuse of the equipment."

In subsequent suit the testimony showed that because of the excessive amount of moisture in the seed corn to be dried, and also because the air ducts had some right-angle bends which interfered with the travel of the heated air, the purchaser was able to dry only about 300 bushels of seed corn in 24 hours, in-

tirely cancels the first guarantee.

A reader asked this question: "If a seller gives a buyer a written guarantee that merchandise is of a stipulated 'grade', can the purchaser extend or enlarge the guarantee by implication?"

Custom is Guarantee

Here is the law: (1) If the testimony shows that a buyer, *expressly or by implication*, made known to a seller the particular purpose for which goods were required and the buyer *relied* on the seller's judg-

The higher court held the seller not liable for breach of the contract. The court said that the purchaser could not invoke an implied guarantee that the corn was fit for human consumption, since the letter sent by the seller to the buyer clearly stated that he was selling "No. 2 White Corn". In other words, the seller merely guaranteed that the corn was grade "No. 2" and this was the full extent of the guarantee.

The purchaser sued for damages on the ground that the seller knew that he desired white corn for the manufacture of "Tortillas", a product for human consumption. Also, the purchaser testified that the seller had verbally guaranteed that the corn was good "clean corn" and could be used for manufacturing food products.

Writing Contains Whole Agreement

The higher court refused to listen to testimony regarding the alleged verbal guarantee and held the seller not liable. The court said:

"The evidence is without conflict that the term 'No. 2 white corn' has a definite meaning in the general usages and customs of the grain trade; and that before being graded as such it must comply with certain regulations and specifications laid down by the Department of Agriculture; when so graded it does not mean it is fit for human consumption; before corn in bulk can be used for human consumption it requires the additional process of cleaning, recleaning and milling; there is a general custom on the part of grain dealers not to warrant corn as fit for human consumption when sold according to the term 'No. 2 white corn'. . . The rule is well settled that where the parties have reduced to writing what appears to be a complete and certain agreement it will, in the absence of fraud, accident or mistake, be conclusively presumed that the writing contains the whole of the agreement between the parties, and parol evidence of prior, contemporaneous or subsequent conversations, representations or statements will not be received for the purpose of adding to or varying the written instrument. . . No ambiguity appears in the contract. It must, therefore, be considered as containing all of the terms agreed upon by the parties, and there can be no evidence of the terms agreed to other than the contents of the writing."

For comparison, see *Lifton v. Harshman*, 182 P. (2d) 222. This



DON'T CLAIM MATERIAL IS DEFECTIVE IF FAULTY INSTALLATION CAUSES FAILURE

stead of 1,500 bushels specified in the written guarantee. As a consequence, almost 3,400 bushels of seed corn germinated, causing damage to the purchaser in the sum of \$16,910.

The purchaser sued the seller for damages amounting to \$38,000, and the seller sued the purchaser to recover \$4,185.00, the unpaid balance of the purchase price of the seed-corn "dryer". The higher court held that the purchaser must pay for the dryer and that the seller was *not* liable for any damages to the purchaser. The court said:

"In the final analysis, the contentions of the parties raise the question, viz.: (1) Whether the clause in contract that plaintiff 'assumes no liability' for consequential damages exonerates it from such liability. . . The use of the negative—assumes no liability—is indicative of an intention that the party shall not become liable."

This case and its final decision clearly verifies the above explanations and assertion that an absolute written guarantee may be rendered void by another clause in the same contract which either limits or en-

tails, there is an implied warranty that the goods shall be reasonably fit for the buyer's purpose. (2) An express or written warranty *does negative* a verbal or implied warranty which is inconsistent with the written guarantee which experienced persons in the same trade or business recognize to be a definite guarantee.

For example, in *El Zarape v. Plant*, 203 Pac. (2d) 13, it was shown that a buyer and seller had conversations over the telephone regarding a sale contract for corn. Later the seller sent the buyer a letter concerning the telephone conversation. In the letter the seller stated that he had sold the buyer one carload of "No. 2 White Corn". Thereafter the purchaser sent the seller a letter acknowledging the contract for "No. 2 White Corn". The seller then sent an invoice for the corn.

In subsequent litigation the buyer proved that the corn was unfit for his intended purposes since it "contained insect larvae, was contaminated and adulterated, and unfit for food."

LUBRICATION COST?



...JUST A MIDGET IN A MOB!

That's how lubrication sizes up against the many other production factors which determine your unit costs! Yet, this "midget in a mob" can effect king-size savings for you by raising machine efficiency, cutting friction losses, reducing maintenance expense.

But it takes more than just "drops of oil and dabs of grease" to assure these benefits...it takes men who know your machines and their exact lubrication requirements. Socony-Vacuum provides both the knowledge and the products...through a program of *Correct Lubrication* engineered specifically for your plant.

For the *genuine* savings of Correct Lubrication, call your Socony-Vacuum Representative.



SOCONY-VACUUM
Correct Lubrication

**WORLD'S GREATEST LUBRICATION KNOWLEDGE
AND ENGINEERING SERVICE**

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

court held that where the contract designates the particular quality of a commodity to be delivered in phrases which are well known in the trade of the particular commodity purchased and sold, such description and designation amounts to an express guarantee that the merchandise will be that particular grade.

Hence a single word or abbreviation may mean to experienced buyers and sellers in a specialized business that which may require several sentences of explanation to the average layman. See the following cases for specific illustration:

In Brandenstein v. Jackling, 278 P. 880. The higher court held that the term "No. 1 rice" was held an express warranty of quality of rice known to the "trade" to be "No. 1 rice". In Pacific States Trading Company, 183 P. 236, 237, the term of "export cured codfish" was held to be an express warranty. In Firth v. Richter, 196 P. 277, 278, the term "Valencia orange trees" was held to be an express warranty. In Porter v. Gestri, 247 P. 247, the term "dried black grapes" was held to be an express warranty that the grapes were of the black variety and quality expected by experienced buyers and sellers of grapes.

court will decide the controversy strictly with reference to the contract itself. And if the contract is indefinite it is invalid, whereby neither the buyer nor seller is responsible in any sense or degree for an alleged guarantee, or breach of the contract.

For example, in Staley v. Harvey, 226 S. W. (2d) 897, a seller wrote a seller, as follows: "This will confirm our sale to you of 600 tons of soil pipe and fittings to be delivered at the rate of 100 tons per month starting in January and to be completed during June. As quoted, the price on victory weight pipe, sizes 2" through 6" will be list price plus 23½% f.o.b. cars Tyler, Texas. The terms on this sale will be sight draft B/L attached payable at Tyler."

The seller refused to ship the merchandise and the purchaser sued for damages. The higher court held the contract indefinite and refused to award damages. In holding the contract void and unenforceable, the court said:

"The letter does not define what is meant by 'list price'. The letter does not grant to either of the litigants the option to select and determine the particular grades, sizes, or items to be delivered at

stated that the purchaser had the right to specify the grades, and sizes of the pipe he wanted the seller to deliver.

Hence, since the contract was void for two reasons, neither the buyer nor seller was obligated to complete any term or guarantee of the contract. If the contract had been void for only one of these two reasons the legal situation would have been the same.

Commercial Practice

Another important point of law, as decided by a recent higher court, is that the term "commercial practice" has a broad meaning when inserted in a contract signed by a buyer and seller experienced in a particular trade or business. In other words, both buyer and seller are bound by *exactly* that which this term means to persons experienced in the specialized trade. And although another clause in the contract specifically makes an expressed guarantee, the quality of the merchandise need not exceed the quality usually indicated by the term "commercial practice".

For example, in Whitin v. United States, 175 Fed. (2d) 504, the testimony showed facts, as follows: A manufacturer sold a single cylinder reciprocating steam engine. The sale contract contained a clause, as follows: "Materials shall be in accordance with accepted commercial practice. . . Governor shall be capable of controlling the revolution of the engine within 10% of the normal revolutions (400 r.p.m.) when the unit is operating at full power with a steam W.P. of 220# p.s.i. and the breaker is tripped."

In other words, while the contract stated that the materials would be in accordance with "commercial practice", yet the governor was specifically and clearly guaranteed to control the revolutions of the engine within 10% of 400 revolutions per minute.

On the engine was a flywheel covered with a casing of tin for the protection of the engine room personnel. Mounted on each flywheel was a governor which controlled the speed of the engine. The engine was designed to run at a speed of 400 r.p.m. with a load, and 410 r.p.m. with no load. When the load is suddenly lost, the engine will immediately speed up to 430 or 440 r.p.m. per minute, but the governor should bring the speed down to 410, in one or two seconds.

One day the governor failed to



REMEMBER: A WRITTEN CONTRACT SUPERSEDES
ORAL AGREEMENT

Quite obviously the above decisions are based primarily upon the previously explained law that parties to a contract are bound by their *original intentions*.

Uncertain Intentions

Of course, the "original intentions" of contracting parties must be apparent through reading of the contract itself, or from testimony given during the trial, otherwise the

any time. Grounded upon such facts, the court concluded that the letter relied upon entirely as the basis of a binding contract was unenforceable, being incomplete and lacking mutuality."

Quite obviously the seller would have been liable in damages to the purchaser (1) if the contract had clearly stated what was meant by the "list price", and (2) if the letter sent by the seller to the buyer had

50 YEAR report to our customers~

YOU HAVE PAID US
OVER \$5 BILLION



FROM DATE OF INCORPORATION ON NOVEMBER 23, 1900 TO DECEMBER 31, 1949

THE COMPANY RECEIVED:

From customers for products purchased by them	\$5,122,702,261
Dividends received, interest earned, and other income	76,068,236
Total revenues	\$5,198,770,497

THE COMPANY PAID OUT OR PROVIDED:

For raw materials, supplies, and services bought	\$2,766,354,971
Provision for depreciation (wear and tear or obsolescence) of plants, buildings, machinery and equipment and for depletion of coal, iron ore and limestone, etc., by mining operations	270,852,769
Federal, State, local and miscellaneous taxes	267,462,953
Interest and other costs on long-term debt (including dividends of \$27,265,805 paid to preferred shareholders)	117,724,128
Total costs	<u>3,422,394,821</u>
Leaving for wages and salaries of employees, dividends to shareholders, and amount required to be retained by company for needs of the business	*\$1,776,375,676 <u>100.00%</u>

*OUT OF WHICH THERE WAS PAID:

Employment costs (pay rolls, vacations, social security taxes, insurance and pensions paid to or for account of employees)	\$1,474,693,687	83.02%
To common shareholders as dividends	125,126,950	7.04
Amount retained in the business for present and future needs and to assure steady work for employees	176,555,039	9.94
Total	<u>\$1,776,375,676</u>	<u>100.00%</u>

Your patronage and the American system of free enterprise have helped make this company an important factor in the steel industry. Our future depends on keeping America free, so that any group of citizens may organize

a business, at any time--with the expectation that it, too, may grow strong--provide jobs, supply needed products and achieve success in the next 50 years. In the preservation of the American way of life lies our future hope.



The Youngstown Sheet and Tube Company

General Offices--Youngstown 1, Ohio

Export Offices--500 Fifth Avenue, New York

MANUFACTURERS OF CARBON, ALLOY AND YOLOY STEELS

ELECTROLYTIC TIN PLATE - COKE TIN PLATE - WIRE - COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - CONDUIT - RODS - SHEETS - PLATES - BARS - RAILROAD TRACK SPIKES.

function and the engine speeded up greatly. After a short interval the flywheel burst apart.

In subsequent litigation the purchaser argued that seller was liable because it impliedly warranted that the flywheel was without defects and would be of sufficient strength to withstand the centrifugal force at a runaway speed far in excess of the maximum of 440 r.p.m., at which it was designed to operate in its normal use. Also, the purchaser contended that the seller had breached its guarantee since the governor did not control the revolutions of the engine without 10% of 400 r.p.m.

The seller proved that the flywheel was made of cast iron, in accordance with accepted *commercial practice* for flywheels on engines of this type, with a certain amount of steel added to the mixture in order to increase the tensile strength of the iron. Also, the flywheel had a factor of safety of 10 which is generally accepted as good commercial practice. The only "latent defect" in the flywheel suggested by the evidence is a certain condition of "porosity".

It is interesting to observe that the higher court refused to hold the seller liable, and said:

at various times from the melts of metals that went into the flywheel castings to determine the chemical ingredients and breaking strength of the material."

Therefore, it is quite apparent that where a contract contains an abbreviation or professional term whose meaning is generally known by buyers and sellers of this particular merchandise, such abbreviation or term has more weight with a court than a conflicting guarantee relating to a specific part or character of the equipment or merchandise. In the above case, for instance, commercial practice of making the flywheel 10 times as strong as normally required was a sufficient factor of safety to prevent the flywheel bursting although the governor failed to function and allowed the flywheel to revolve, two, three, or even eight times its normal speed. Hence, the term "*commercial practice*" had precedent over the specific guarantee on the governor.

Who is Liable?

Considerable discussion has arisen from time to time over the legal question: Who is liable for breach of a manufacturer's guarantee if the product, while in the hands of a purchaser, fails to per-

ter into a contract with a manufacturer to furnish the insulated pipe to be used in the system. The manufacturer agreed to furnish the insulation and waterproofing for the field joints and also furnish the *labor to install* the pipe which was manufactured in 20-foot sections completely insulated *except* that 18 inches of bare pipe was at each end of the sections. These uninsulated portions were guaranteed by the manufacturer to be insulated after the sections had been placed in the trenches by the contractor, welded together and the welds tested for leaks. After the job was completed the corporation required the contractor to replace and reinstall a substantial portion of the piping at a cost of \$19,915.06. The contractor brought suit against the manufacturer for breach of its contract.

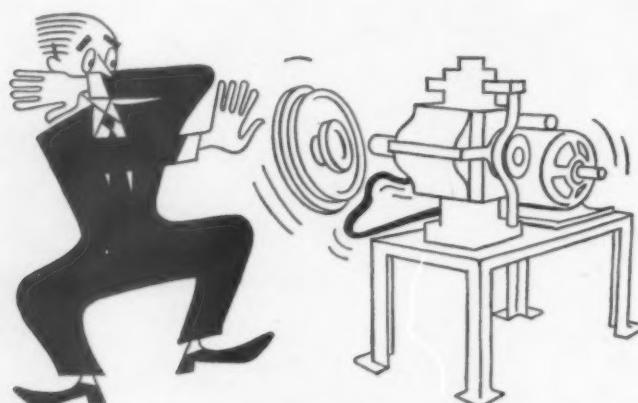
The testimony showed that while the work was in progress, heavy rains wet the insulating material on the pipes in the trenches. The wetting of the insulating material was a major factor in the eventual failure of the system.

The higher court held that the manufacturer was not liable because the jury decided that the damages resulted from the failure of the contractor to make the underground installation in accordance with the recommendations of the manufacturer, and the contractor laid the pipes without due regard of water and progress of the manufacturer when sealing the joints.

Hence, this decision clearly indicates that under no circumstances is a seller or manufacturer liable in damages to a purchaser for defective new or used materials or equipment, or otherwise, if the damages were caused by any acts or *omission* of acts on the part of the purchaser.

For comparison, see *Zesch v. Abrasive*, 183 S. W. (2d) 140. The testimony showed facts, as follows: A manufacturer sold an abrasive cutting-off wheel. It was *not* designed for grinding with pressure on its sides. The wheel exploded when being used by the purchaser's employe with pressure on its sides. The employe lost his eyes and sued the manufacturer for damages claiming that the latter breached an implied guarantee to supply a wheel fit for the intended purposes. The higher court held:

"The evidence does not tend to show that defendant (manufacturer) undertook to furnish the cutting-off wheel for a particular special purpose."



STANDARDS OF COMMERCIAL PRACTICE OUTWEIGH A SPECIFIC GUARANTEE

"The fracture of the flywheel was caused by the excessive speed of the engine. This was in turn caused by the failure of the governor to check the speed. The porosity of the cast iron in the flywheel made it more liable to burst and break apart with the increased centrifugal force of the speeding engine. . . It is undisputed that there is a tendency to porosity in any castings, for the reason that as the molten metal cools and solidifies it contracts. . . Seller made daily tests of samples taken

form according to the manufacturer's guarantee?

The answer is: The purchaser is responsible if the manufacturer proves that his acts resulted in the breach.

For instance, in *Crockett v. Ehret*, 156 Fed. (2d) 817, the testimony showed facts, as follows: A contractor contracted to install an underground vacuum steam distribution system for a corporation in accordance with plans and specifications. The contractor then en-



Get on the Beam...

**WITH A HEVI-LIFT TO
CUT YOUR HANDLING COSTS**



You're on the way to new economies when you send your loads "thru-the-air" with a P&H Hevi-Lift. Wherever speed and frequent handling are factors, P&H Hevi-Lifts save money because *one man* does the whole job quickly and safely — by merely pressing buttons. This is the way it's done these days in thousands of locations — with all kinds of loads up to 15 tons.

Why temporize? Why delay savings the Hevi-Lift is ready to bring you *now*? The first step is to let us send you the new bulletin which shows dozens of money-saving ideas.

HANDLE IT "THRU-THE-AIR" AT LOWER COST

CAPACITIES UP TO 15 TONS



P&H

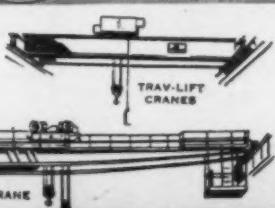
ELECTRIC HOISTS
4577 West National Avenue
Milwaukee 14, Wis.

HARNISCHFEGER CORPORATION

HOISTS • WELDING ELECTRODES • MOTORS P&H EXCAVATORS • ELECTRIC CRANES • ARG WELDERS



ZIP-LIFT
HOISTS



HEVI-LIFT
HOISTS

HEAVY DUTY CRANE

THESE ADDED VALUES ARE STANDARD EQUIPMENT ON P&H HEVI-LIFTS

The P&H Hevi-Lift is built for years of hard service—backed by America's largest builder of overhead materials handling equipment. It costs you less to have the Hevi-Lift Added Value features than to be without them.

SAFER — True motor ratings insure against failure at full capacity loads and speeds. Thermal overload protection, 110-volt control current and crane-type limit switch provide maximum safety.

LIFETIME CONSTRUCTION — Precision-built...shaved gears...grease sealed bearings...moisture, dust and acid-proof.

SMOOTHER OPERATION — Motor specifically built for frequent reversals in hoist service.

MAIL THIS COUPON TODAY

HARNISCHFEGER CORPORATION, Hoist Division
4577 West National Avenue
Milwaukee 14, Wis.

Gentlemen: Please send your new bulletin on P&H Hevi-Lift Hoists.

Name.....

Company.....

Address.....

City..... Zone..... State.....

New Products Ideas



If you want more information on New Products items, just list the item numbers in a letter to Purchasing Reader-Service Department on your company letterhead. This also applies to Catalogs and Bulletins described on Pages 19, 20, 22, 24 and 166. See Page 19.

Lantern Lamp

A sealed beam type lamp for use in an all-weather electric lantern has been developed by the Westinghouse Lamp Division, Bloomfield, N. J. The all-glass lamp is powered by a 6-volt battery in an aluminum case. Although using the same size battery, the lamp's 5,500 beam candlepower is twice that of a lamp in a conventional electric hand lantern, which has a bulb and separate metal reflector. The lamp has a clear lens for spotlighting purposes. The entire unit weighs 44 ounces.

No. 101—For further information see Page 19

Safety Goggle



An "optically correct" one-piece, one-ounce all plastic safety goggle to fit all faces is a new product of American Optical Company, Southbridge, Mass. AO says it has exceptionally wide angle vision and can be worn over most standard types of personal glasses and most prescription spectacles and goggles. Other features are: comfortable plastic nosepiece, many perforations to minimize fogging and provide adequate ventilation, non-flammable

plastic construction, and four point contact with face by means of rolled edges for greater comfort. Supplied in clear (No. 479) or green (No. 480) plastic styles.

No. 102—For further information see Page 19

Cutter & Radius Grinder



Tool, die and machine shops, Kellering shops, metalworking and plastics plants, and other installations that require accuracy and sharpness in cutting tools can find good use for Pratt & Whitney's new cutter and radius grinder. The machine grinds an infinite variety of milling cutters, end mills and other tools. Quick to set up and easy to use, the unit has provisions not only for conventional straight and spiral teeth, but for various combinations of radii, angles and spirals encountered in die and mold making cutters. Available in two types: the R-6 which has a flute length capacity of 4½"; the R-8 which will accept flutes up to 10" long. Pratt & Whitney is at West Hartford 1, Conn.

No. 103—For further information see Page 19

Pocket Slide Caliper



L. S. Starrett & Company's well-known pocket slide caliper is now available in the six inch model, with capacity for measuring outside dimensions or diameters up to 4¾" and inside dimensions from ¼" to 5". Separate precision machine graduated scales on the slide provide for measuring in either 32nds or 64ths of an inch. The reverse side of the stock is accurately machine graduated with a handy six inch scale in 32nds of an inch. The tool is made of high grade stainless steel and is both rust-proof and stain-proof with a permanently bright finish. Starrett is at Athol, Mass.

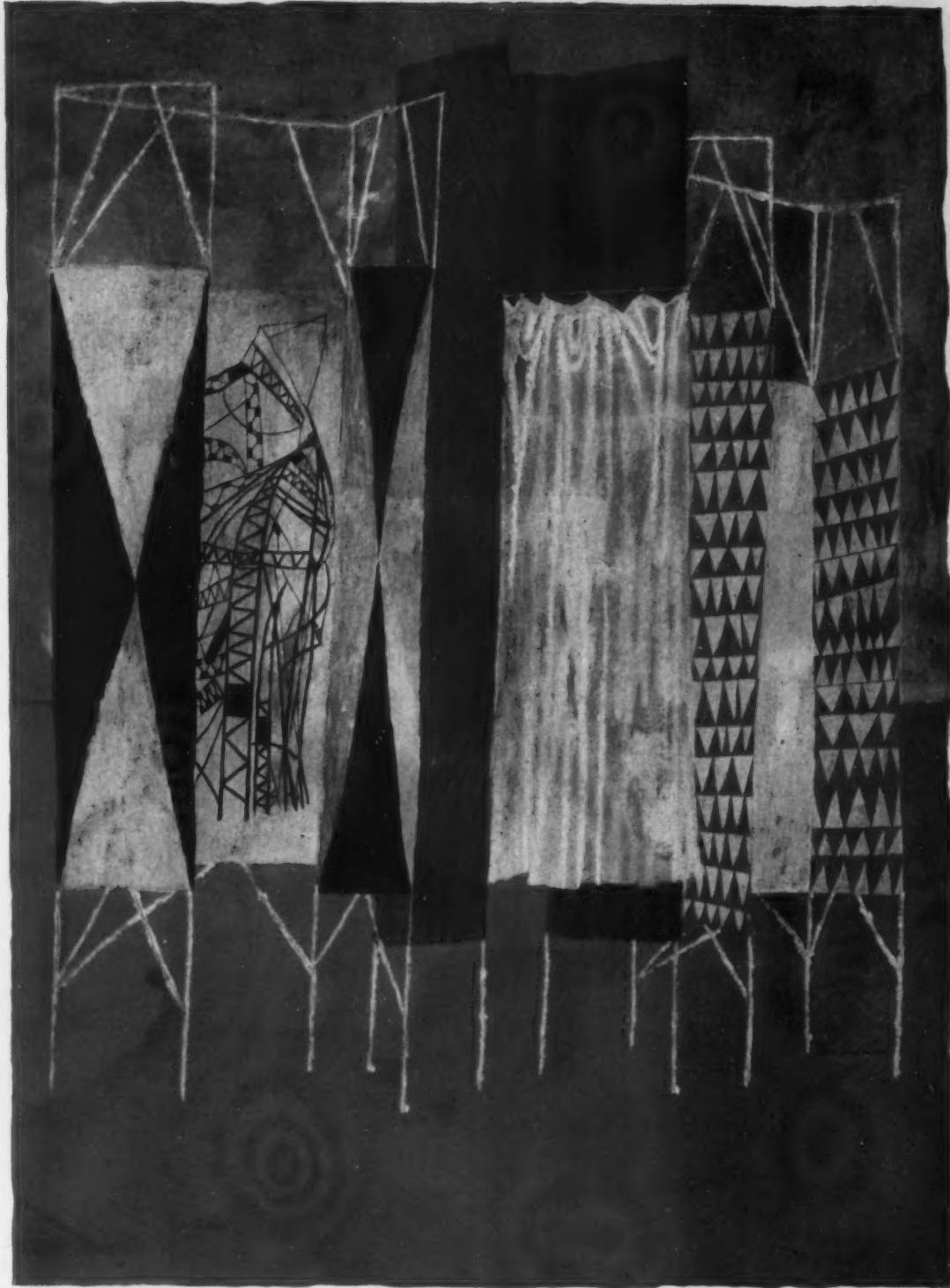
No. 104—For further information see Page 19

Rust-Proof Paint

Derusto is a new protective coating that is said to prevent rust, absorb rust, and stop rust on either new or rusted surfaces. It is made by Master Bronze Powder Company, 5009 Calumet Ave., Hammond, Ind., which is offering a free sample and a copy of the results of tests made by Pittsburgh Testing Laboratories. Derusto will resist acid fumes and alkali solutions. It has passed Government hot and cold water tests, salt spray and salt water immersion tests. It is available in standard industrial colors. It is self-leveling and can be used for brushing, spraying, or dipping.

No. 105—For further information see Page 19

(Please turn to page 130)



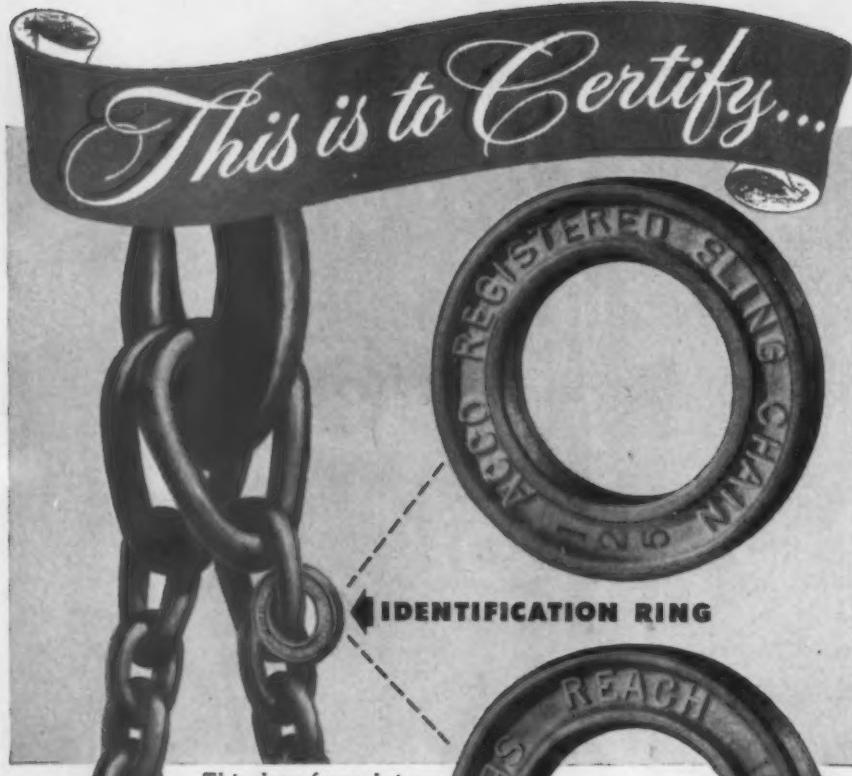
"THE VOTING BOOTHS": BEN SHAHN

John Locke on the purpose of government

The end of government is the good of mankind . . . and which is best for mankind, that the people should be always exposed to the boundless will of tyranny, or that the rulers should be sometimes liable to be opposed when they grow exorbitant in their power, and employ it for the destruction and not the preservation of the properties of the people?

CONTAINER CORPORATION OF AMERICA





This drop-forged ring is permanently attached to each ACCO Registered SLING CHAIN. All essential identifying information shown on both sides of ring, as illustrated, protected by the outer flange.

ACCO Registered SLING CHAIN

SEND for this catalog which contains information on how to select, use and care for sling chains. It is DH-80.



The right sling chain for the job is the safe one. The wrong sling chain might be a hazard—to men, materials and equipment.

In *ACCO Registered SLING CHAINS*, you have a selection of types, sizes and materials to best meet the needs of any application—plus the assurance that every sling that carries the Identification Ring has been fully tested and rigidly inspected.

AMERICAN CHAIN—“The Nation’s Chainmaker”—feels the responsibility of positively identifying every sling chain that leaves the plant.

ACCO

York, Pa., Chicago, Denver, Detroit,
Los Angeles, New York, Philadelphia,



Pittsburgh, Portland, San Francisco,
Bridgeport, Conn.

**AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE**

In Business for Your Safety

Snow Blower



Winter is just about here and Gravely Motor Plow & Cultivator Co., Dunbar, W. Va., has a new heavy-duty snow blower to help you meet some of the problems it brings. The attachment, which will cut a swath 25" wide through snows up to four feet deep, is made for use with the Gravely 5 hp tractor. The blower is quickly adjustable to throw snow either to the left or right at any angle desired by the operator. It is one of the 20 attachments for the tractor, which include reel mower, gang mower, sickle bar, rotary plow, cultivating tools, lawn roller, blade-type snow plow and power brush. Literature available.

No. 106—for further information see Page 19

Crane



Clyde Iron Works' new Model UC Handi-Crane, for material handling at industrial plants, railroads, etc. has a high lift capacity of 5 tons. It is mounted on a Minneapolis-Moline, Model UT1 tractor. The boom is raised and lowered by means of a hydraulic cylinder that allows safe and accurate control independent of any other operation. The boom can be 18 or 24 feet, and rotates 320°. A counterweight permits the load to be swung at a constant radius with absolute safety, Clyde states. Short running radius and special roller bearing steering mechanism are said to permit easy and fast maneuvering in congested areas. The crane has a pintle hook attached so that it can also be used for towing service. The company's address is Duluth 1, Minn.

No. 107—for further information see Page 19
(Please turn to page 134)

THIS TIRELESS METAL THAT KEEPS GAUGES HONEST MAY REVOLUTIONIZE YOUR PRODUCTS



United States Gauge, world's largest manufacturer of gauges, uses Riverside Beryllium Copper for both pressure and vacuum diaphragm capsules of its absolute pressure instruments.

There's no place for muscle-bound metals in the diaphragms of an absolute pressure gauge. Constantly sensing and reporting changes in manifold pressure of internal combustion engines, diaphragms must be super-sensitive yet rugged enough to withstand flexure.

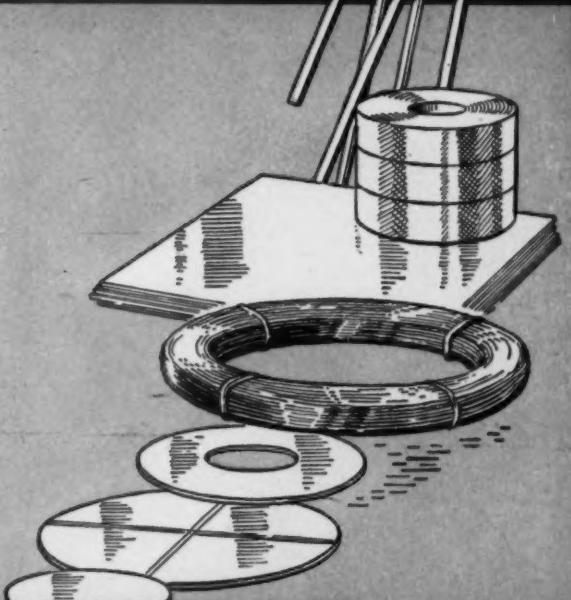
Beryllium copper, one of the alloys made by Riverside, is the only metal possessing the necessary physical properties that will do the job economically. In this application beryllium copper is "cold worked" to a tensile of 80,000 pounds, and formed while being heat treated to a tensile of about 210,000 pounds. Beryllium copper diaphragms easily take the initial stresses caused by evacuating air and the ever changing stresses of flexure.

Because of these advantages—plus corrosion resistance, wear resistance, formability and superior electrical and thermal qualities—Riverside Beryllium Copper finds wide use in gauges, springs, thermostats, bearings, gears, valve sleeves and seats.

This versatile alloy—or one of the other Riverside metals, Phosphor Bronze, Nickel Silver or Cupro Nickel—may be the specific answer to your alloy problem. We produce these alloys in standard or special grades to meet your requirements. And we'll be glad to work with your technicians in examining and solving your particular puzzle.



If alloys are giving you trouble—in processing or in service—send the case history to Riverside. Also, be sure to ask for our new pocket-size Alloy Handbook. It's invaluable as a handy reference and a guide to alloy specification—and it's yours without obligation.



RIVERSIDE
ALLOYS

Alloys developed by research, proved by use

phosphor
bronze
•
nickel silver
•
cupro nickel
•
beryllium
copper

THE RIVERSIDE METAL COMPANY

Riverside, New Jersey

Newark, N. J. • Cleveland, Ohio • Chicago, Ill.
Hartford, Conn. • Rochester, N.Y. • Detroit, Mich.

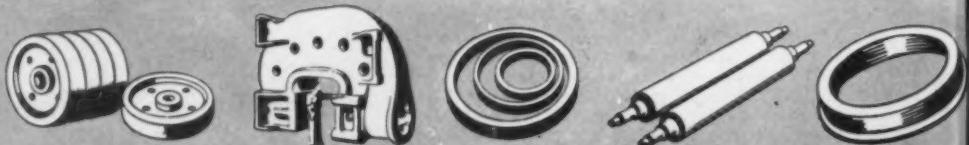
Export Agent, International Brass & Copper Co., Inc., 52 Broadway, New York City

UNUSUAL Jobs like this

of STANDARD CASTINGS

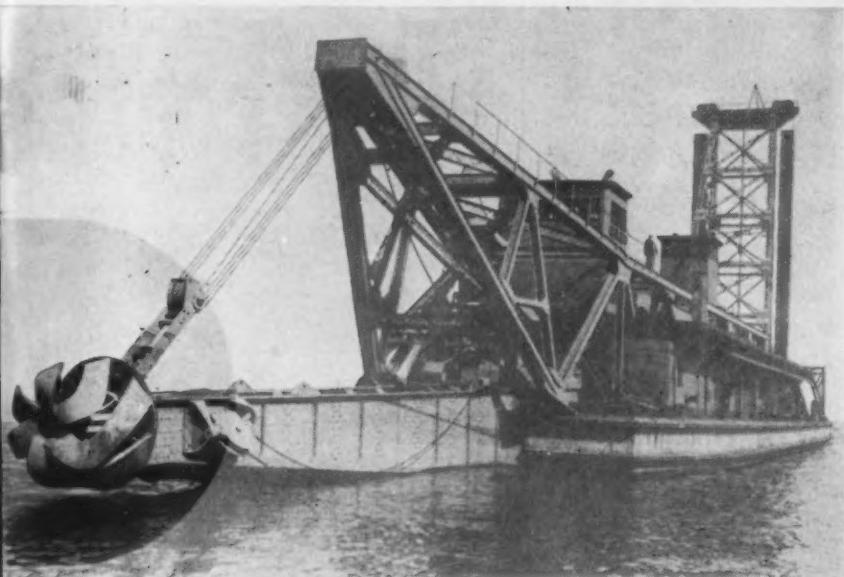


**STANDARDIZE ON
STANDARD FOR—**



WHEEL MILL PRODUCTS, STEEL CASTINGS, WELDLESS RINGS, FORGINGS, FLANGES

is Certify the USUAL properties



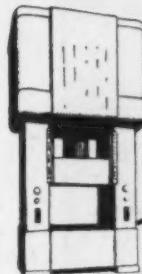
The giant cutter heads on Ellicott Hydraulic Dredges have a really tough job to do. They chew sand, silt, mud, clay, cemented gravel and disintegrated rock from the beds of rivers and lakes, loosening the material so it can be sucked up and discharged hydraulically.

Service of the heads calls for superior service qualities in the castings. Production of the heads calls for superior know-how in the pattern shop and on the casting floor. Ellicott found a single answer to these twin requirements—Standard Steel Works castings.

Big enough to have every needed facility—small enough to give every order careful, individual attention—Standard is a dependable source of supply for *unusual* castings which because of size, complication or special properties are beyond the abilities of the average foundry. If your casting requirements are in this category . . . just get in touch with Standard.



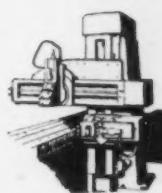
Standard has produced some of the largest turbine runners ever installed, for some of the nation's greatest hydro-electric developments.



Massive parts for mammoth presses, where loads run into hundreds of tons and the soundest, strongest castings are essential, are regularly produced at Standard.



Castings for bridge supports, and similar miscellaneous castings for structural or other uses, can be produced in any size and quantity in Standard's modern foundry.



Frames, bed plates and similar members for precision machine tools often demand special properties and unusual quality in the castings. Standard specializes on such production.

NOTICE

ATTENTION: DESIGN AND PURCHASING DEPARTMENTS

Standard is equipped to produce castings ranging in weight from 5 to 130,000 pounds for all classes of service. Recent developments in chemical compositions and heat treatments produce substantial improvement in physical properties. Whatever your needs—let Standard quote on your requirements.

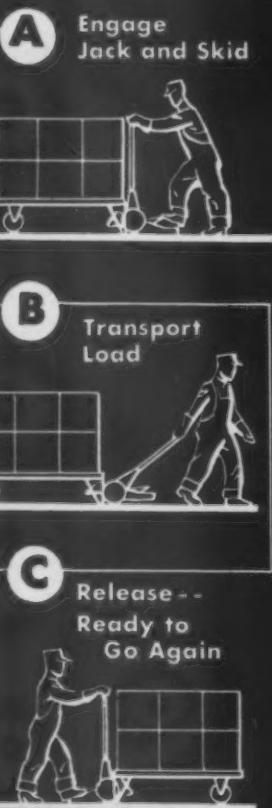


BALDWIN

STANDARD STEEL WORKS DIVISION

THE BALDWIN LOCOMOTIVE WORKS: Standard Steel Works Division, Burnham, Pa., U.S.A.
Offices: Chicago, Cleveland, Houston, New York, Pittsburgh, San Francisco, St. Louis, Washington.

**Cut Handling Costs
with the
Colson LIFT-JACK
System—
it's as simple as ABC**



Through production, in and out of storage, on and off freight cars or trucks, one Colson Lift-Jack, with wood or steel semi-live skids, does the work of many conventional hand trucks, saves time and money.

Other cost-cutting materials-handling equipment by Colson includes drum and barrel trucks, platform trucks, hand trucks and precision-built wheels and casters. Our engineers are glad to help you select the right equipment to meet your needs—exactly.

THE COLSON CORPORATION
ELYRIA, OHIO

Please send free 56 page catalog "Colson Materials-Handling Trucks".

Name.....
Position.....
Company.....
Address.....
City..... Zone..... State.....

THE COLSON CORPORATION
ELYRIA, OHIO

Hinged-Platform Truck



In some industrial buildings the volume of material handled does not justify a platform truck for each floor, yet the elevators are not large enough to take full-length standard type trucks. To meet this and similar problems, The Elwell-Parker Co., Cleveland, O., has come up with a power industrial truck that has a hinged platform. Overall length of the truck with platform in load-carrying position is 109" and with the forward end of the platform raised the length is 84". Weight of the truck is 3670 pounds and its load carrying capacity is 4000 lbs. Extreme width of the truck is 38"; height of headframe is 83". Height of platform in maximum raised position is 59".

No. 108—For further information see Page 19

Air-Fed Hood



Chicago Eye Shield's new #600 air-fed hood is approved by U. S. Bureau of Mines under "Class C" respirator for use in toxic dust and fumes. To eliminate bulk and rigidity, and to provide comfort and full freedom of movement, the hood is made of an extremely lightweight, highly flexible, rubberized fabric. It is completely adjustable. Large window allows extreme wide angle vision. Plastic headband is mounted

(Please turn to page 136)

**THE SAFE
OPEN STEEL FLOORING
IS TRI-LOK**



No object over $\frac{1}{2}$ square inch can pass through super-safe U-Type Tri-Lok Flooring. It is unsurpassed for plant installation, walkways, loading platforms. Maximum strength, air and light with minimum weight. Efficient distribution of concentrated loads. Write for Bulletin JV 1140.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the
Tri-Lok Company
Dravo Bldg., Pittsburgh 22, Pa.
Sales Representatives in
Principal Cities



**Dry Clean Your Work Gloves
Save 40% — Free Trial**

Don't throw away your greasy, soiled used work gloves. We can salvage and recondition them.

New dry cleaning method saves up to 40% of work glove costs. Send half dozen used gloves for free trial.

Fabric and leather gloves returned to original softness — each glove reshaped on electrically-heated fingers.

Gloves matched in pairs returned in "like new" condition.

In Stock

New leather-palm work gloves, knit wrist \$4.50 per doz. pairs.

Horsehide gloves—band top—\$10.50 per doz. pairs.

Send sample lot to factory
112 E. 23rd Street,
New York City, N. Y.

For further information contact

FINECRAFT PRODUCTS CO.

101 Fifth Avenue
New York 3, N. Y.

Today it's Roebling!



Why production men choose Roebling Cold Rolled Spring Steel

IT'S BEEN PROVED in plants the country over . . . that Roebling Cold Rolled Spring Steel saves preparation time on machines, minimizes machine stoppages, and cuts down the number of rejects. And this is only natural! Every inch of Roebling Spring Steel is identical in gauge, grain and finish . . . meets users' specifications with absolute uniformity.

Roebling Cold Rolled Spring Steel is available annealed, hard rolled untempered; scaleless tempered; tempered and polished; tempered, polished and strawed; or tempered, polished and blued.

Your Roebling Field Man will gladly help you choose the cold rolled spring steel, or round, flat or shaped wire, that will improve your product and your production. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING A CENTURY OF CONFIDENCE

Atlanta, 934 Avon Ave. ★ Boston, 51 Sleeper St. ★ Chicago, 3525 W. Roosevelt Road
★ Cincinnati, 3253 Fredonia Ave. ★ Cleveland, 701 St. Clair Ave., N. E. ★ Denver, 4801
Jackson St. ★ Houston, 6216 Navigation Blvd. Los Angeles, 216 S. Alameda St. ★
New York, 19 Rector St. ★ Philadelphia, 12 S. Twelfth St. ★ Portland, 1932 N. W.
14th Ave. ★ San Francisco, 1740 Seventeenth St. ★ Seattle, 900 First Ave. S.



(Continued from page 134)

**Write for Catalog
OF USES
AND SPECIFICATIONS**

GENERAL Industrial Pneumatics

ADD THESE 6 SELLING POINTS TO YOUR PRODUCT

SAVE	REDUCE
• TIME	• BREAKAGE
• LABOR	• MAINTENANCE
• FLOORS	• COSTS

Available in assemblies of Tires, Tubes and Wheels. Size O. D. 8" to 23" — 200 to 2000 lbs. capacity for low or high speeds.

THE GENERAL TIRE

Rigid CASTER FORKS

Wide-base caster forks engineered to carry heavier loads without adding dead weight to equipment. Available in identical pairs in a wide range of sizes.

Swivel

**More AIR VOLUME • More STABILITY • More LOAD CAPACITY
DELIVERS Long Mileage IN HI-SPEED SERVICE**

SEND FOR CATALOG . . . DEPT. 7

THE GENERAL TIRE & RUBBER CO. AKRON, OHIO

on a friction swivel to allow full vision up or down as the user moves his head. Air is brought into the hood almost noiselessly. The company is located at 2300 Warren Blvd., Chicago, Ill.

No. 109—For further information see Page 19

Package Tying Machine



The Pak-Tyer is a machine for tight tying of any shape or size packages faster and better than can be done by hand. It is made by Felins Tying Machine Co., 3351 N. 35th St., Milwaukee 16, Wis. No adjustments are needed for the various sizes. A wide range of cotton twine from 3 to 24-ply can be used. The machine will single-tie up to 60 packages per minute or cross-tie 25 to 30. It is equipped with automatic trip for speedy operation or for use with conveyor system, and with foot treadle trip for difficult packages. Made in three models for small, medium, or large bundles.

No. 110—For further information see Page 19

Welder

General Electric's Apparatus Department, Schenectady, N. Y., has announced its 6WK30J series, portable a-c welders, one of the first standard lines commercially available incorporating silicone insulation. The insulation, water repellent, and unaffected by high temperatures, is said to give a high margin of safety and operating dependability. Instant arc striking without any manual adjustment is provided by "Hot Start" automatic control. The ampere range is covered by three overlapping current ranges which permit precise current control. This combination of features is claimed to assure lower operating costs because idling current is reduced to a minimum and more efficient use of electric power is accomplished.

No. 111—For further information see Page 19

(Please turn to page 138)



Greist Mfg. Co. improves lighting, speeds production...with G-E slimline lamps

6 reasons for choosing the world's most modern light source, General Electric slimline fluorescent

1. SINGLE PIN BASE . . . EASY TO REPLACE
2. LOWER UPKEEP . . . FEWER REPLACEMENTS
3. INSTANT START . . . NO STARTERS
4. HIGH EFFICIENCY
5. LONG, DEPENDABLE LIFE
6. NEW, STREAMLINED APPEARANCE



IN the new addition to the Greist Manufacturing Company of New Haven, General Electric slimline fluorescent lamps are used throughout. More than 80 footcandles of light, plus light-colored surroundings, make seeing easier—boost worker accuracy and production.

The continuous rows of G-E slimline lamps in 4-lamp fixtures are easy to maintain; rugged push-pull sockets permit one man to quickly replace a 16-foot row of lamps without moving his ladder.

All the advantages listed at left are yours when you use General Electric slimline fluorescent. Ask your G-E Lamp supplier—he will be glad to advise you what type of slimline best meets your needs.

FREE BOOKLET. For information on what slimlines can do for your factory and offices, write for a copy of "Modernize with G-E Slimline". General Electric, Dept. 166-P 12, Nela Park, Cleveland 12, Ohio.



You can put your confidence in—

GENERAL ELECTRIC

**7 MILLING OPERATIONS
ELIMINATED because IT'S
"INVESTMENT CAST"
IN ONE PIECE!**



CUTS COSTS 41%!

The clamp casting of oil hardening tool steel pictured above was made for J. & S. Tool Company's jaw clamp. Formerly 7 different time consuming expensive milling operations were necessary . . . until INVESTMENT CASTING engineers planned the very same part for production by the Investment Casting process at a 41% saving! Our engineers are ready to do the same for you—on tool, equipment or machine parts. Any quantities considered.

Send parts or drawings

INVESTMENT CASTING CO.

319 Chestnut Street Newark 5, N. J.
Precision Castings

Have you thought of PAPER

as a
COMPONENT MATERIAL?

Today special papers manufactured by Central are replacing metal, cloth and many other materials . . . improving product design . . . lowering costs . . . increasing production.

There may be a place in your product where an engineered paper by Central can improve its quality or lower its cost. Consult Central Paper Engineers about your problems . . . their expert advice is yours for the asking.

CENTRAL PAPER COMPANY INC.

2446 Lakeshore Drive • Muskegon, Michigan
BRANCHES IN LEADING CITIES



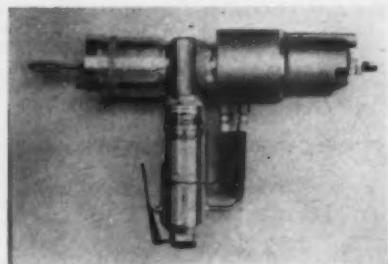
Hand Dryers



National Dryer Sales Corporation, 1125 W. Lake St., Chicago, Ill., guarantees that its electric hand dryers for institutions, industrial plants, etc. will dry hands in 20 seconds. The dryers are made in lifetime white porcelain enamel with chrome plated exterior fittings. The compact units measure 11 $\frac{1}{8}$ " long, 9 $\frac{5}{8}$ " high and 6 $\frac{1}{8}$ " deep. The drying nozzle pivots 360° for easy drying of both hands and face. Sealed-in ball bearings eliminate oiling. Automatic circuit breaker prevents heating element from burning out under any circumstances. Dynamically balanced fan and resilient motor mountings eliminate vibration noise. Electrical connections are supplied for surface or between-wall wiring.

No. 112—For further information see Page 19

Automatic Countersink



Boeing Airplane Co. has licensed Buckeye Tools Corporation, Dayton 1, O. to manufacture a new portable, air-powered countersinking tool which is almost completely automatic in operation. The tool supplies its own thrusting action and has self-locking grip that holds the tool firmly to the work sheet while operating. It requires no manual effort on the part of the operator other than inserting the mandrel in the hole to be countersunk. The tool, designed for countersinking holes $\frac{3}{8}$ " diameter and larger, is available in capacities ranging from $\frac{3}{4}$ " to $1\frac{1}{8}$ " across the mouth. Use of the tool in the Boeing-Wichita

(Please turn to page 140)



Display bust, molded for
Jewels by Bogoff, Chicago

Putting New Sparkle into Jewelry Sales

Here is glamour, sleek beguiling glamour that really helps to sell these exclusive jewels by Bogoff. Yet it's glamour mixed with sound engineering.

For this skillfully molded plastic display, while vastly *more attractive*, actually *costs less* than the one previously used. Lightweight and compact, it also sharply reduces packing and shipping costs.

Let us look at your product in the same light—with a view toward product improvement at reasonable cost. We'll gladly send a representative without obligation.



Write on your letterhead for the new *Injection Molded and Extruded Plastics Catalog*. Or, for detailed information about **WHIPS-PLASTIC*** piping, tubing and fittings, write for circulars containing data and illustrations.

*Trademark Registered

ELMER E. MILLS CORPORATION

INJECTION MOLDERS and EXTRUDERS of: Tenite, Lumarith, Plastacel, Fibestos, Lucite, Nylon, Plexiglas, Polystyrene, Styron, Iodin, Vinylite, Geon, Plexene, Polyethylene, Cerex, Forticel, **WHIPS-PLASTIC***, Saran, and other Thermoplastic Materials.

2930 NORTH ASHLAND AVENUE • CHICAGO 13, ILLINOIS.

(Continued from page 138)

plant is reported to have reduced the time required to countersink $\frac{1}{2}$ " holes in 75ST aluminum from $3\frac{1}{2}$ minutes to 35 seconds.

No. 113—For further information see Page 19

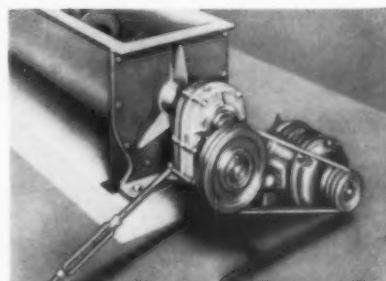
Glove Reconditioning



U. S. Industrial Glove Corp., 9350 Roselawn Ave., Detroit, Mich., offers a glove reconditioning service it claims is saving one large user over 80% of all gloves sent in for salvage. The service, which should not be confused with ordinary industrial laundering, includes complete renovation, sanitizing and packaging of all types of worn-out fabric and leather gloves and protective clothing. Special equipment and methods have been developed for performing the unique operations. Further details available.

No. 114—For further information see Page 19

Reducer



Dodge Manufacturing Company, Mishawaka, Ind., claims its new Torque-Arm Reducer for output speeds from 115 to 330 rpm is the first and only shaft-mounted reducer designed for this speed range. The new single reduction unit is made in four sizes which cover capacities up to 27 hp. Ease and economy of the reducer are attributed to shaft mounting which eliminates special engineering, the cost of a foundation, flexible couplings, sliding base, and the time consuming operation of lining up. Any speed within the unit's range can be obtained with stock sheaves properly related in size. The reducer can be driven through any V-belt drive. Flat belt drive can also be used.

No. 115—For further information see Page 19
(Please turn to page 142)

An Anchor Chain Link Fence is the best way to shut out snoopers, trespassers, agitators, troublemakers. What's more, it will control traffic in and out of your plant, as well as protect outdoor storage of materials and supplies.

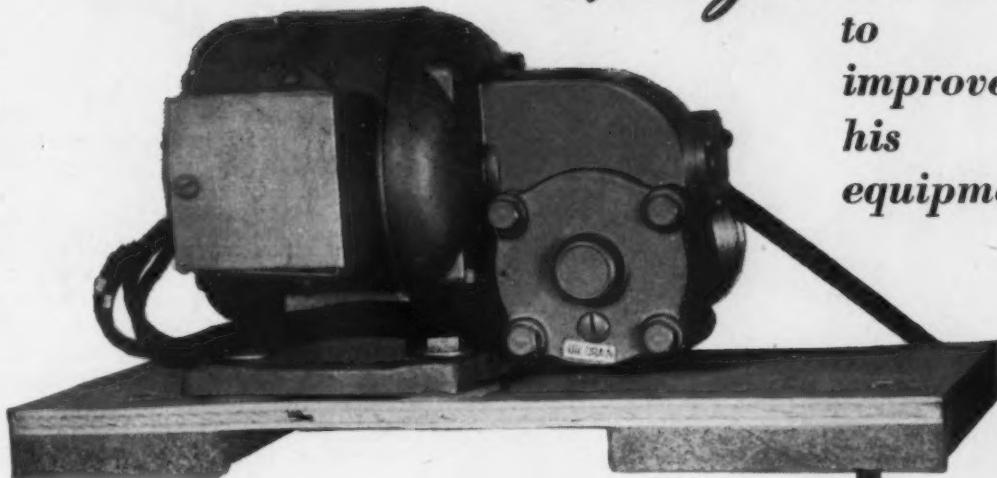
You really get *long-lasting* protection with Anchor Fence! H-Beam Line Posts are self-draining, rust-free, rigid. Deep-Driven Anchors hold the fence firmly erect and in line. Square Frame Gates are amazingly free from warping and sagging. Square Terminal Posts provide extra strength and durability.

Call a trained Anchor Fence engineer to discuss your needs or write for our catalog to: ANCHOR POST FENCE DIV., Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Maryland

Anchor Fence
Nation-wide Sales and Erecting Service

*an
imaginative
photographer
uses*

*Spongex[®] cellular rubber
to
improve
his
equipment*



Portable motor no longer "walks" away from its job

Jack Stock's portable motor "walked" away every time he put it to work. He mounted the motor on Spongex cellular rubber—now it stays on the job. Spongex absorbs the vibrations that give legs to portable motors.

Mr. Stock is in the commercial photography business; he doesn't manufacture motors. As a neighboring businessman in Shelton, he is well acquainted with the properties of Spongex cellular rubber. Now he mounts all his motors, stationary and portable, on Spongex.

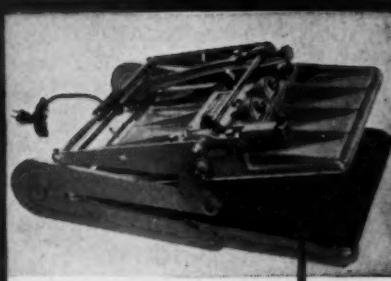
Smaller illustrations show other ways Spongex helps to produce better results in Mr. Stock's business.

If you have a vibration, insulation, cushioning, gasketing, sealing or sound damping problem, think about Spongex. Cellular rubber does not become a "product" until you make it one in your application.

Technical Bulletin on Sponge Rubber available on request.



Seal against light and dust
In installing this copy camera attachment, custom made by Mr. Stock, on top of a photograph enlarger it was essential to block out dust and light. A Spongex gasket performs perfectly.

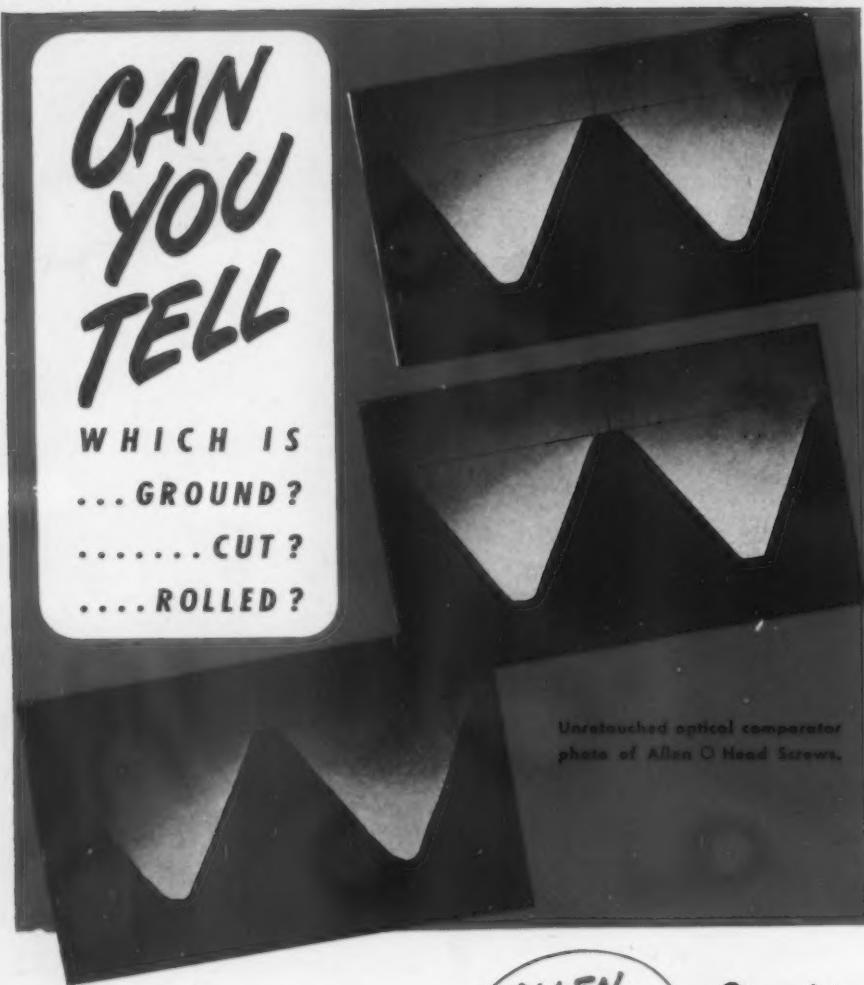


Resilient compression pad
This dry mounting press is fitted with a resilient Spongex cellular rubber base. Spongex equalizes pressure to mount photographs evenly and more securely on their backings.

The World's largest specialists in Cellular Rubber

THE SPONGE RUBBER PRODUCTS COMPANY

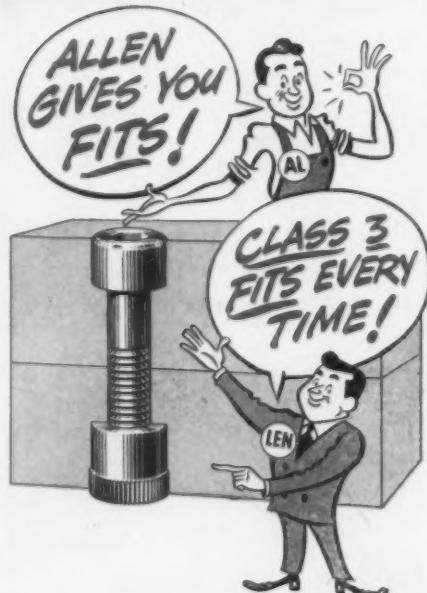
304 Derby Place, Shelton, Conn.



Unre touched optical comparator photo of Allen O Head Screws.

Find it hard to decide? Don't waste your time because threading method is purely our problem. Your interest is in *Uniform Class 3 fit*. You get it every time when you specify Allen O Heads instead of just Allen-type screws.

We use all the accepted threading methods depending on the metal, the size and, in some cases, the application. We investigate every new development and incorporate the best into our manufacturing methods. Because we do not commit ourselves to any one method, we can give you the extra precision and uniformity that makes Allen O Heads fit smoothly and stay tight under the most gruelling service.



SOLD ONLY THROUGH LEADING DISTRIBUTORS

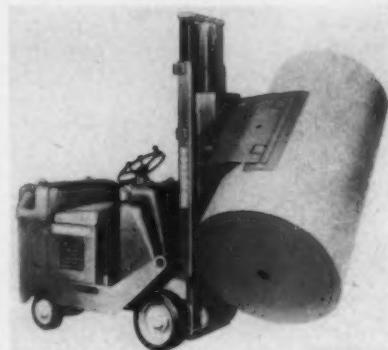
Write the factory direct for technical information and descriptive literature.



ALLEN 
MANUFACTURING COMPANY
Hartford 2, Connecticut, U. S. A.
NEW YORK, CLEVELAND, DETROIT, CHICAGO, LOS ANGELES

FOR 40 YEARS THE BUY-WORD FOR SOCKET SCREWS

Roll Clamp



Towmotor Corporation, 1226 E. 152nd St., Cleveland, O., has a new special fork truck attachment for safe, rapid handling of paper rolls and other cylindrical objects. It will securely grip a roll weighing up to 2800 lbs. and rotate it 360 degrees in either direction. Rolls can be picked up from either the vertical or horizontal position and deposited in either position. The clamp can pick up and deposit rolls against walls at either side of a truck. Rolls with minimum widths of 32" and diameters ranging from 30" to 44" can be accommodated.

No. 116—For further information see Page 19

Band Dispenser



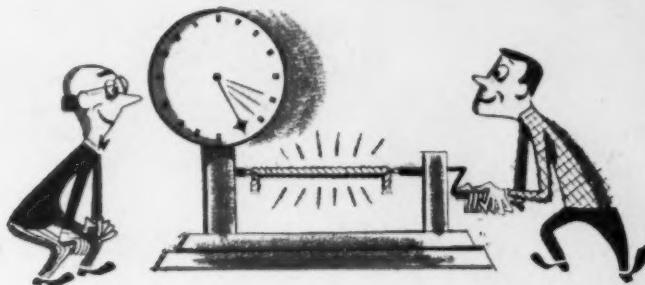
Acme Steel Company, 2840 Archer Ave., Chicago, Ill., has brought out new dispensers for its unit-load band, which is used to reinforce shipping containers and to brace carload shipments. Both the stationary and the portable models hold and cut to length one or two coils of unit-load band. Bands are cut in a single, low-effort down-stroke of the 30" hand lever. Problem of over-running band is minimized by V-belt controlled feed. Tool steel blades of shear mechanism are easily accessible for service or replacement. Any two-coil combination of $\frac{3}{4}$ ", $1\frac{1}{4}$ " or 2" band in all thicknesses can be handled.

No. 117—For further information see Page 19
(Please turn to page 144)

From prehistoric times,
ramie fiber has been
known for its
greater strength . . .



Now... Johns-Manville
makes it into a packing
of greater strength



That's why **NAVALON** lasts longer than
other cold-liquid packings



LONGER PACKING LIFE . . . less down time . . . lower packing costs . . . it's the same story wherever this new Johns-Manville packing made from ramie is being used in cold liquid service.

And no wonder! Navalon has the high tensile strength inherent in ramie, strongest of all the organic fibers. It has the long-lasting, rot-resisting qualities for which ramie has been known for centuries. And it is made by an exclusive Johns-Manville process which imparts unusual lubricating properties as well—another reason why Navalon

consistently outperforms other high quality packings in service against fresh and salt water, brine, cold oil and many other liquids.

If you have a tough packing problem in your plant . . . need a packing that will stand up and take it when other packings let you down, we suggest you give Navalon a try.

See your distributor today. Or send for folder PK-32A that gives further details about this new money-saving ramie fiber packing. Just fill in and mail the coupon below.



Johns-Manville
Box 290
New York 16, N. Y.
Please send me your folder on Navalon Packing (PK-32A).

Name _____

Company _____

Address _____

City _____ State _____

(Pur-12)

Johns-Manville
PACKINGS & GASKETS

MACO Metal Name Plates



ABC O
OILOMATIC

G
Gem



feeders



Write today for
folder and tell us
your requirements.

Fine Quality, Attractive, Durable

A MACO die-embossed name plate on your new or established product reflects quality and adds sales appeal. Made to your specifications in any shape, form, design, color with either vitreous or duco enamel, or if desired, we will create a distinctive name plate for you. The many companies using MACO name plates are testimonial proof that a MACO name plate possesses all the qualities you are looking for.

METAL ARTS CO., Inc. Rochester, N.Y.

Dept. 9
Rochester, N.Y.

more than
80
Oakite
Materials
to solve
your cleaning
problems

NEW Guide to Paint Stripping—FREE

"HOW TO STRIP PAINT," just off the press, tells how Oakite materials and methods save money, time, trouble on such jobs as

- Stripping big parts
- Stripping parts in large volume
- Stripping with or without steam
- Stripping oil-based paints, synthetic enamels, alkali-resistant plastics, resin-based paints—japans, wrinkle finishes, nitro-cellulose lacquers, alkyds, phenolics, ureas
- Preparing surfaces for repainting

Want a copy? Just ask your neighborhood Oakite Technical Service Representative. Or write Oakite Products, Inc., 54 Thames St., N. Y. 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
TRADE MARK REG. U. S. PAT. OFF.
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in
Principal Cities of United States and Canada

Adjustable Conveyor



Stewart-Glapat Corp., Zanesville, O., claims its new Adjustovveyor combines in one mobile, mass-produced unit all the features of a custom-designed conveying job for a specific application. Two conveyors in one—a standard length unit and an extreme length unit—it is said to "grow with the plant" and to handle all types of packages or any kind of material that can be placed upon a moving belt. It can assume ten positions, all suited to different applications. It can be used for both low and high operations, for elevating between floors and for neatly stacking in piles. Adjustovveyors are made in a complete range of lengths.

No. 118—For further information see Page 19

Rams and Pumps

A complete line of remote control hydraulic rams and pumps has been announced by Templeton, Kenly & Co., manufacturer of Simplex jacks. Named Re-mo-trol, the units operate where limited space or other difficulties make the use of self-contained jacks impossible. They enable the operator to lift, pull or push from a distance and in any direction—up, down, sideways or at an angle. An unusual feature is a "center hole" tubular ram used on units of 30-ton and greater capacity, which enables use of the Re-mo-trol as a puller. Available in seven models, including a telescoping ram, ranging from 10 to 100-ton capacities.

No. 119—For further information see Page 19

5 Ft. Conveyor



Model 100-U conveyor, only five feet long, is designed for applications where a smaller conveyor unit is considered more practical. It is made by Industrial Engineering & Mfg. Co., Brimfield, Ind. It is equipped with an 8" Neoprene-im-
(Please turn to page 146)

... might pay you to
switch to welded* tubes



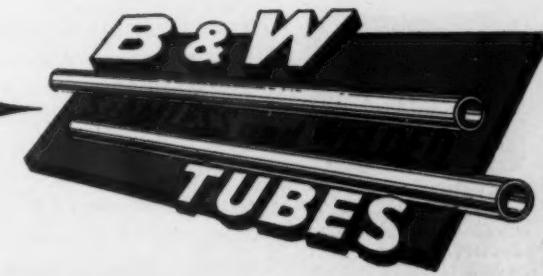
Ask your B&W Tube Representative . . . he knows

Because it has all the attributes of its seamless counterpart, B&W Welded Tubing in Carbon and Stainless Steel grades lends itself readily to hundreds of applications. Saves money, too

FOR EXAMPLE: If your tubing requirements fall within the available range of diameters and wall thicknesses, you will find it economical to purchase B&W Welded Carbon or Welded Stainless Steel Tubing. Because B&W produces both Seamless & Welded Tubing, its representatives can make completely unbiased recommendations of the type best suited for your specific fabrication requirements.



B&W makes both



THE BABCOCK & WILCOX TUBE COMPANY

General Offices: Beaver Falls, Pa.

Plants: Alliance, Ohio and Beaver Falls, Pa.

Sales Offices: Alliance, Ohio • Beaver Falls, Pa.
Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14,
Ohio • Denver 2, Colorado • Detroit 26, Mich. • Houston 2, Texas
Los Angeles 15, Calif. • New York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo.

San Francisco 3, Calif. • Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla. • Vancouver, British Columbia.

TA-1564-G



"Beware of little expenses! A small leak will sink a great ship."

—Ben Franklin's Almanac, 1757

One penny dropped maketh not much noise, but thousands of pennies dropped over the year maketh a big bang before ye annual stockholders' meeting.

*—Acme Steel Notebook, 1950**

Ben Franklin's advice is just as good as it ever was—maybe more so in these uncertain days.

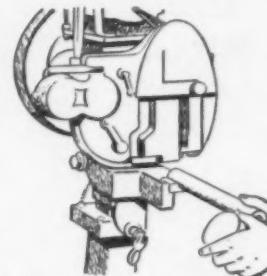
For more than 70 years Acme Steel methods and Acme Steel products have been helping American business to improved efficiency, greater thrift. We are now working with about 50,000 customers, including almost every industry, improving their packaging, shipping and materials handling.

For details on Acme Steel products, write on your business letterhead for free booklets specifying the products in which you are interested.

ACME STEEL COMPANY

Dept. P-120, 2838 Archer Avenue, Chicago 8, Illinois
There are 46 Acme Steel service offices in the U.S. and Canada.

*The sage maxims of Ben Franklin, together with modern parallels, appear in Acme Steel Notebook, 1950. We have a free copy for you. Just ask for it.



Automotive and aircraft industries rely on Acme-Morrison Metal Stitchers for fastening metal-to-metal and metal-to-other materials.



Heat no problem! Acme Silverstitchers, like the one shown here, licked the problem of closing bags of hot asphalt.



ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVERSTITCHER machines • ACME SILVERSTITCH stitching wire • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slat stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, cutters, punches, tool mounts, reel stands, coil holders, coil trays.

**ACME
STEEL**

Of the 3808 Acme Steel employees, 337 or 8.8% have worked with Acme for more than 25 years each and are members of our Quarter Century Club. Their total service represents 9305 years—tribute to "A Good Place to Work."

(Continued from page 144)
pregnated belt with flights $1\frac{1}{8}$ " high spaced on 18" centers. The unit is also available without flights. Belt speed is approximately 125 fpm. Take-up mechanism provides for ample belt adjustment. Pulleys are equipped with permanently lubricated and sealed ball bearings. Side rails may be removed when conveyor is used for handling cartons or bulky materials. Literature available.

No. 120—For further information see Page 19

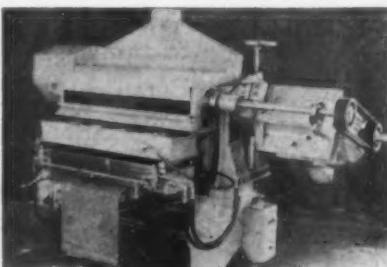
Toolroom Lathe



Rivett Lathe & Grinder, Inc., Brighton 35, Boston, Mass., says its new precision toolroom lathe is recommended for both sensitive instrument work and heavy-carbide cutting. Called Model 1020S, it will handle any toolroom turning within its $12\frac{1}{2}$ " swing and 20" centers. Unusual features described as contributing to its versatility are: a 40% heavier weight of 4000 lbs.; a headstock back-gearing at speeds ranging from 22 to 400 rpm; and a bed with $12\frac{3}{4}$ " wide steel ways uniformly hardened to 60 Rockwell C. scale. Catalog No. 1020A is available.

No. 121—For further information see Page 19

Finishing Machine



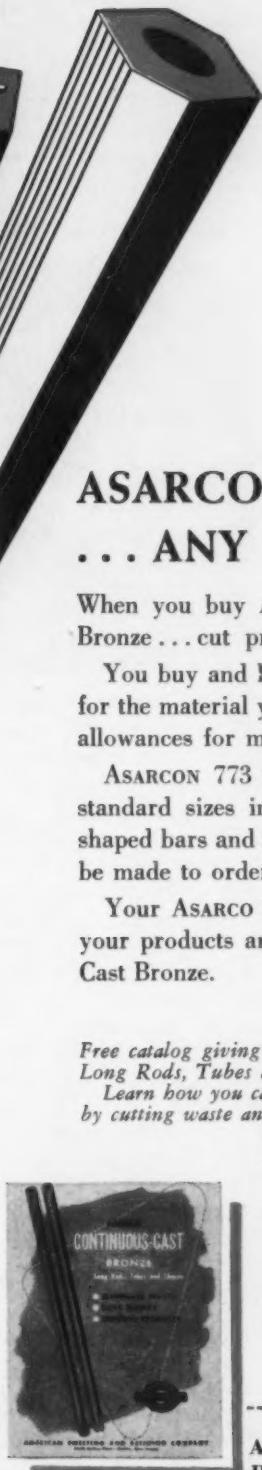
This special purpose, single spindle surface finishing machine is recommended for applications where requirements approach a precision grind operation. The maker, Clair Manufacturing Company, 1011 S. Union St., Olean, N. Y., says it is suitable for a wide variety of small metal products, such as pliers. (Please turn to page 148)



West Coast Sales Agent:
KINGWELL BROS. LTD., 444 Natoma Street, San Francisco, Calif.
American Smelting and Refining Company
Perth Amboy Plant, Barber, New Jersey
OFFICES: Barber, New Jersey
Whiting, Indiana

DECEMBER, 1950

Want Additional Product Information? See Page 19.



ASARCON 773 BRONZE BARS ... ANY LENGTH YOU NEED

When you buy ASARCON 773 you get the finest SAE 660 Bronze . . . cut precisely to your requirements.

You buy and handle fewer pounds of metal . . . pay only for the material you use. It is no longer necessary to include allowances for metal rejects.

ASARCON 773 Continuous-Cast Bronze is stocked in 216 standard sizes in 105" lengths . . . round or symmetrically shaped bars and tubes, special alloys, and longer lengths can be made to order.

Your ASARCO Distributor can show you how to improve your products and reduce your costs by using Continuous-Cast Bronze.

• • •

Free catalog giving useful data on ASARCO Continuous-Cast Bronze Long Rods, Tubes and Shapes.

Learn how you can use Continuous-Cast products to slash your costs by cutting waste and improving machinability . . . how you can get a better product by using materials with physical properties unobtainable in conventionally fabricated stock. Learn how you can always "buy any length you need".



American Smelting and Refining Company
Perth Amboy Plant, Barber, New Jersey

Please send me a free copy of the new 12-page catalog
"ASARCO Continuous-Cast Copper Alloys."

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

**Better Protection For
Your Workers
...Higher Production
For You!**

**U. S. DIPPED NEOPRENE
CANVAS UTILITY GLOVES**

Protect hands against cuts, splinters, abrasion, oils, mild acid solutions and disinfectants. Fingers curved for flexibility. For extra comfort, soft flannel linings. Knit wrists, or gauntlets. For any kind of work, indoors or out; for any industry; for any job where practical hand protection is needed.



**U. S. DIPPED NEOPRENE
INDUSTRIAL GLOVES**

Rough-surface fingers assure positive, easy gripping. Neoprene resists gasoline, oils, greases and corrosive chemicals. Construction conforms to natural curves of hand—eliminates straining and pulling. Highly flexible, permitting easy, natural working motions.

Full range of sizes, lengths and weights.



Available from your nearest
United States Rubber Company Branch

**U. S. INDUSTRIAL
GLOVES**



UNITED STATES RUBBER COMPANY

(Continued from page 146)
wrenches, pocket knife springs, hinges, flatiron sole plates, etc. It can be equipped for either mechanical or magnetic holding. A roll 40" wide may be mounted on the single spindle. Automatic hydraulic "in" and "out" stroke is adjustable from 0" to 24", with a maximum holding and working area of 24" x 38".

No. 122—For further information see Page 19.

Small Ion Exchange Unit



Small-quantity users of distilled water can now get top-quality water direct from an ordinary faucet, without worrying about elaborate equipment. LaMotte Chemical Products Co., Towson, Baltimore 4, Md., is offering the Filtr-Ion, an 8½" long, 1½" diameter tube which has a chemical action identical with that of the huge Monobed water-conditioning units commonly used in steam power plants. It is said to be the smallest and lowest-cost application of the Monobed ion exchange principle. Quantity of deionized water delivered will vary with the hardness or mineral content of the raw water. Normally, up to 10 gallons of laboratory quality water may be expected from each unit before refills of resins are required.

No. 123—For further information see Page 19.

Unbreakable Tumblers

Tumblers molded of Konite and described as practically indestructible are being marketed for use in industrial restaurants, institutions, etc., by Plastics Manufacturing Company, 825 Trunk Ave., Dallas, Tex. They are not subject to crazing and staining, and are unaffected by fruit acids or alcohol. They handle easily and may be cleaned in a dishwasher. Brushes are not necessary. Available in 12 oz. and 9½ oz. sizes.

No. 124—For further information see Page 19.

(Please turn to page 150)



Down Go Cleaning Costs

With Wear-Resistant FULLER FIBER BROOMS

You can reduce your daily cleaning costs with Fuller Fiber Brooms. Grueling wear-down tests by our own Research Department and, more important, the tests performed by our thousands of satisfied customers, prove conclusively that Fuller Fiber Brooms give better service for a longer period of time. We invite comparisons of the wearing qualities of the Fuller Fiber Broom with any other broom under any sweeping conditions. Test it yourself. Phone or write your nearest Fuller Industrial Representative today.



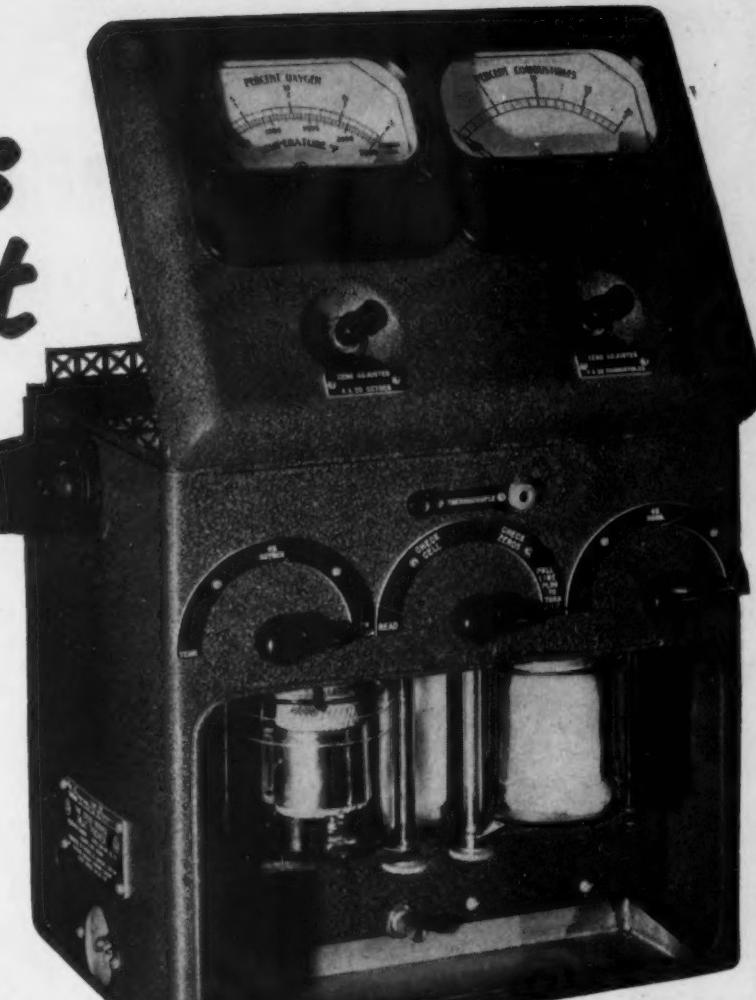
INDUSTRIAL DIVISION
The FULLER BRUSH Co.

3554 MAIN STREET • HARTFORD 2, CONN.
In Canada: Fuller Brush Co., Ltd., Hamilton, Ont.

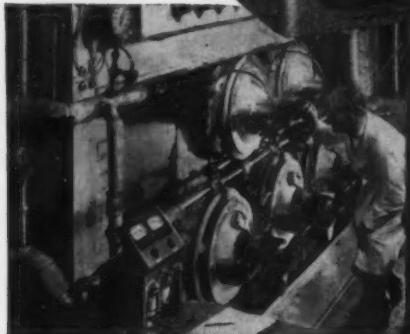
This Miraculous Instrument Tells All!

Yes, the Cities Service Heat

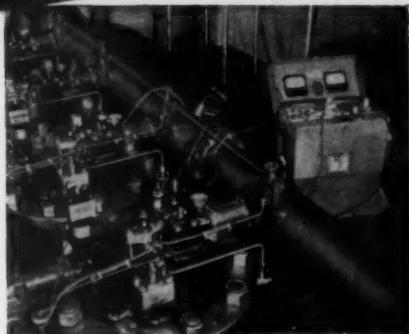
**Prover tells all you want
to know about the combus-
tion efficiency of gas and
Diesel engines...and indus-
trial furnaces of all types.**



1. Hundreds of Industrial Firms—including leading steel, locomotive, truck, automobile, aircraft, tool, instrument manufacturers and others, are profiting from this unique service. Above shows use on Open Hearth Steel furnace.



2. Immediate Production Increases—are realized by fast control of furnace atmospheres. The Heat Prover quickly and accurately registers both excess oxygen and unburned fuel being wasted on this industrial boiler.



3. Gas and Diesel Exhaust Analysis—here being made on a large 4-cycle Diesel. This remarkable instrument gives a continuous record of what percentage of the fuel entering the combustion chamber is converted into productive energy.



FREE . . . This Helpful New Booklet

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 765
New York 5, New York

Please send me without obligation your new booklet entitled "Combustion Control for Industry."

Name _____

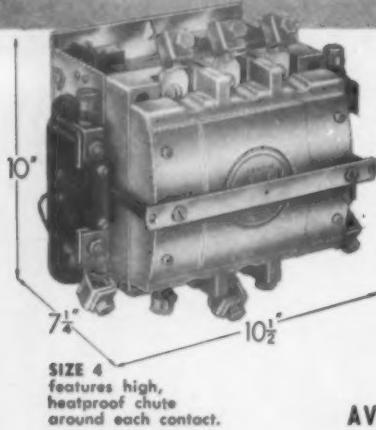
Address _____

City _____ State _____



**YOUR Logical
SOURCE of SUPPLY
for
MOTOR CONTROL**

EQUIPMENT AND ACCESSORIES



**"RA"
MAGNETIC STARTERS**

Advanced design featuring Right Angle balanced mechanism accounts for $\frac{1}{2}$ the space, less weight and dependable performance. Alkyd base and hood provide full protection. Tough contacts, operating in vertical position, keep free of foreign breakdown material — assure positive contact. Low wattage, high quality magnets provide economical operation and long life.

AVAILABLE IN SIZES 0, 1, 2, 3 and 4.

PUSH BUTTON STATIONS



Provide ability to furnish the desired control in any circuit combination needed. Available in standard and heavy duty — for surface or flush mounting.

MANUAL STARTERS

Control motors up to 7 1/2 H.P. maximum, to provide economical, safe, positive control with or without overload protection. Available in general purpose, dustproof and weatherproof types.



MIDGET-SIZE RELAYS



Type "R" available in enclosed type or open type. Wide range of relays can be assembled from standard parts to meet specific requirements. Rated 110 to 550 Volts A.C. — 115 and 230 Volts D.C.

LOAD-LIMIT SWITCHES

Available in 2, 3 and 4 pole models to give thermal overload protection to motors rated up to 5 H.P., single and polyphase, through 440 Volts A.C., and 2 H.P., 230 Volts D.C. Available in surface and flush types.



**ARROW-HART
BRANCH WAREHOUSES
FOR SERVICE**

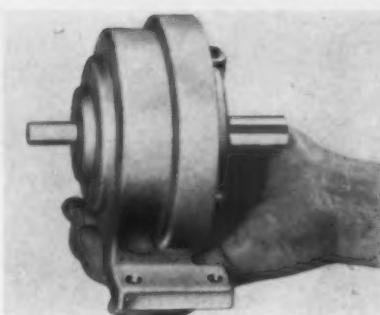
CITY
Boston 10, Massachusetts
Chicago 6, Illinois
Cincinnati 2, Ohio
Cleveland 13, Ohio
Dallas 1, Texas
Detroit 1, Michigan
Los Angeles 13, California
New York 17, New York
Philadelphia 4, Pennsylvania
San Francisco 3, California
Syracuse 2, New York

ADDRESS
157 Federal Street
551 West Monroe Street
347 West Fourth Street
3746 Prospect Avenue
3200 Main Street
3126 Cass Avenue
405 East 3rd Street
801 Second Avenue
3201 Arch Street
1345 Howard Street
201 East Jefferson Street

PHONE
Liberty 2-5354
State 2-4727
Dunbar 7709
Express 1-4108
Riverside 6253
Temple 3-0751
Michigan 8048
Murray Hill 4-0767
Evergreen 6-1160
Market 1-2112
2-3645

THE ARROW-HART & HEGERMAN ELECTRIC CO.
2512 Hawthorn St., Hartford 6, Conn. Phone 5-1144

Speed Reducer



A new Heliocentric speed reducer, said to cut cost and conserve space in all in-line reducer applications in the $\frac{1}{4}$ to 1 hp range has been introduced by Universal Gear Corporation, 19th and Martindale, Indianapolis 7, Ind. Known as Model 5-E, the unit is suitable for any straight-line installation in which the input rpm does not exceed 1800. Maximum torque capacity is 1000 inch-pounds. Universal says the unusually compact and streamlined overall design will conserve valuable installation space. Anti-friction ball bearings used throughout.

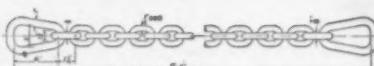
No. 125—For further information see Page 19

Slip-Retardant Wax

A new floor wax that has all the advantages of a high grade finish and at the same time provides a slip-retardant surface has been introduced by S. C. Johnson & Son, Inc., Racine, Wis. Known as Shur-Tred, this self-polishing wax is said to give maximum beauty, protection, and ease of maintenance, yet definitely "slows down" the floors on which it is applied. Johnson states it is easy to apply, by standard methods, and dries quickly to a high gloss like its other self-polishing floor waxes. It does not leave a greasy, slimy-like film on the floor.

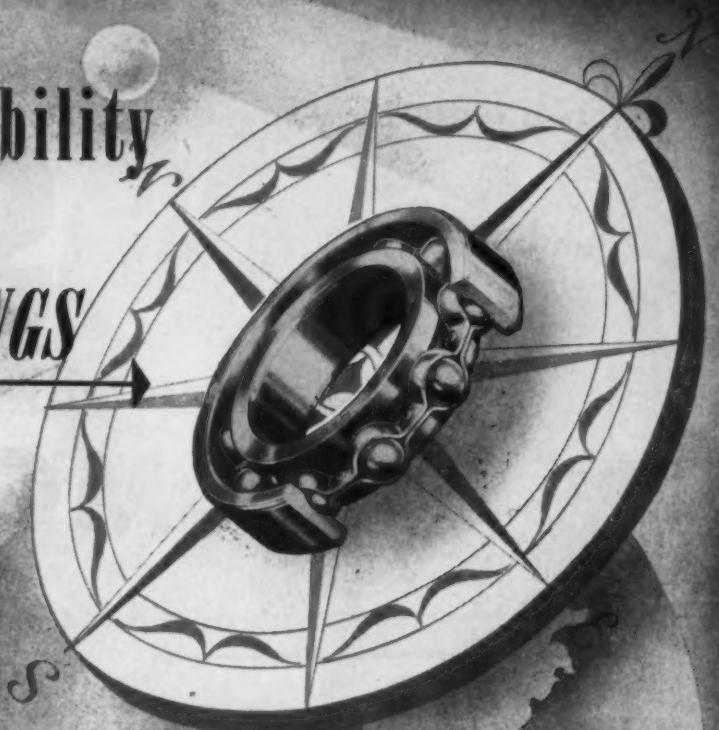
No. 126—For further information see Page 19

Bundling Chains



Round Associate Chain Companies has announced a complete line of bundling chains for industrial use. They are supplied in $\frac{5}{8}$ ", $\frac{3}{4}$ " and $\frac{7}{8}$ " chain sizes and made in any desired length to suit the user's requirements. Chain is of close link style. Available in low or high carbon steel or alloy quality, depending on size of load and type of service. They may be obtained from Bridgeport Chain & Mfg. Co., Bridgeport, (Please turn to page 154)

For Quick Availability
Always
GET YOUR BEARINGS



From BEARING SPECIALISTS

Members of THE ANTI-FRICTION BEARING DISTRIBUTORS' ASSOCIATION

THERE is a "Bearing Specialist" near you that can provide you with a tried and proven, fast, dependable service even on "hard-to-get" bearings.

Your "Bearing Specialist" has instantly available a complete stock of sizes and makes of bearings. His considerable investment, highly trained personnel, and years of experience are your guarantee of economical, satisfactory service.

When in trouble always call a "Specialist"! Why not write us today and we will have our member call on you and give you full information.

A word about the ANTI-FRICTION BEARING DISTRIBUTORS' ASSOCIATION

A group of BEARING SPECIALISTS, working with and for, every segment of industrial America—maintaining the highest standards of business ethics and occupying a place of esteem in industry for the services they render—banded together to further increase their usefulness to industry.



**"Installation, Maintenance,
Removal of
ANTI-FRICTION BEARINGS"**

This 20-page booklet tells you the how and why of caring for all types of bearings. Practical ideas on all phases of bearing life. Ask for it now!



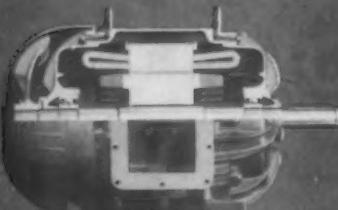
THE ANTI-FRICTION BEARING DISTRIBUTORS' ASSOCIATION
1900 EUCLID AVENUE • CLEVELAND 15, OHIO

"Keeps cool as a cucumber—
and as easy to clean . . ."



For hazardous services

EXPLOSION-PROOF SEALEDPOWER MOTORS



Now you can have all the advantages of SEALEDPOWER design in motors that are approved by Underwriters' Laboratories for Class I, Group D, and Class II, Group F and G locations. For use in refineries, chemical plants, grain elevators and similar hazardous services throughout industry, they meet every safety requirement.

Now available on special order...

SEALEDPOWER BRAKE MOTORS



Here's a combination many equipment builders have been waiting for. The new, money-saving C-W Brake, mounted with the SEALEDPOWER Motor (with suitable double shaft extension), provides a compact package of reliable, precisely-controlled power. Single, wide-area action brake gives totally-reliable stopping power, and the unique motor...

ELLIOTT

CROCKER - WHEELER

SEALED

totally-enclosed . . . fan-cooled

MOTORS

Dust and fumes are blown outside and away

"Time-out for clean-out" is the bugbear that boosts maintenance costs of most totally-enclosed, fan-cooled motors. But "time-out" is *designed* out of SEALEDPOWER Motors. Because there are no easily-clogged, hard-to-clean internal ventilating passages, they do not have to be taken apart for cleaning.

Even under extremely dirty conditions a SEALEDPOWER needs cleaning only one-third as often as other motors. Then, it can be quickly restored to full efficiency by simply removing the fan cowl, and cleaning the fan assembly.

CONTINUOUS COOL-RUNNING EFFICIENCY A SEALEDPOWER

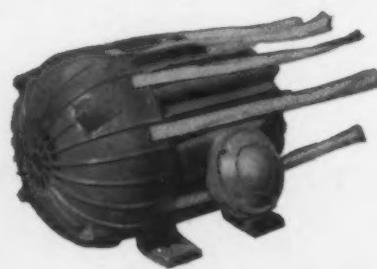
Motor runs cool, year after year, because no blanket of dust or corrosion can pile up to block escaping heat. Also, the outside fin construction, original with Crocker-Wheeler, provides 150% more cooling surface.

BEATS RUST AND CORROSION The frame of the SEALEDPOWER is rugged gray iron, for highest resistance to conditions of excessive moisture and corrosion. There is no thin steel outer shell to gradually disintegrate and block cooling channels.

PRELUBRICATED, SEALED BEARINGS Double-row-width and packed with an extra supply of stability-tested grease, they need no attention for at least five years.

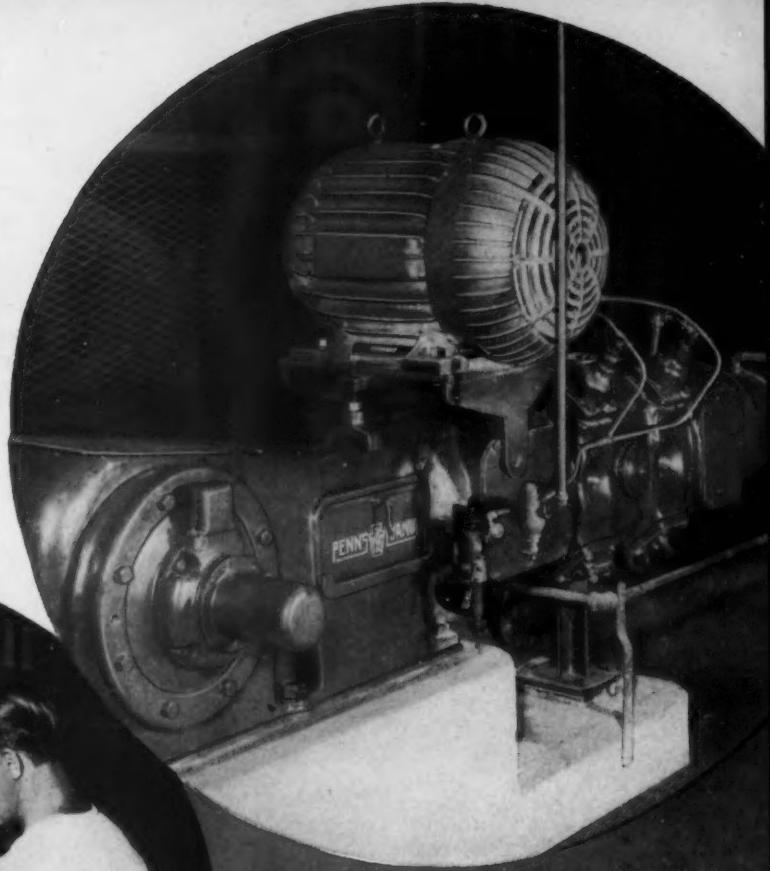
add the plus of Sealedpower performance

to the other sales features of the motor-driven machines or apparatus you make. Use SEALEDPOWERS, also, on the motor-killing drives in your own plant. Compare them from every standpoint—performance at peak loads, low maintenance, and long life. You'll find there's no other motor to match them.



Available in new ratings—Standard, 3 to 100 hp . . . Explosion-proof, in NEMA frames 364-505. Send the coupon today for detailed descriptive Bulletins.

POWER

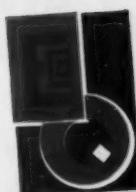


Above — In one of the nation's largest distilleries, this Explosion-proof SEALEDPOWER Motor drives a Pennsylvania pump and air compressor. Explosion-proof motors are specified for all drives, so that they can be moved about from non-hazardous to hazardous services.

Left — In the machine shop of a well-known maker of valves and fittings, this 5-hp standard SEALEDPOWER Motor drives a special grinder. The mixed brass and abrasive dust is blown outside and away, cannot clog and cause the motor to heat up. In the galvanizing room, where it is subjected to corrosive vapors, a 15-hp SEALEDPOWER Motor drives the ventilating fan.

ELLIOTT COMPANY CROCKER-WHEELER DIVISION

Branch Offices: Atlanta, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Kansas City, Los Angeles, Milwaukee, Minneapolis, New Orleans, New York, Newark, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle, Tulsa, Washington, Wilmington. Representatives in principal cities.



CW-13



Brake Motors



Protected-type
Motors



Wound-rotor
Motors



Direct-current
Motors



Elliott Motors larger than the Crocker-Wheeler line are built by the Ridgeway Division at Ridgeway, Pa.

Elliott Co., Advertising Dept., Jeannette, Pa.

Please send:

Bulletin SL-300-2A, standard SEALEDPOWER Motors

Bulletin SL-300-5, Explosion-proof SEALEDPOWER Motors

Information on SEALEDPOWER Brake Motor

Name _____

Title or function _____

Company _____

Address _____

P-1250



U. S. Pat. 2,181,076

SPEER

carbon brushes, with their freedom from sparking, overheating, and energy loss, are widely used in the electric motors that gather and pump oil. The high current-carrying capacities and excellent contact provided by Speer brushes make them equally valuable in motors for any pumping job.

A complete line of brushes has been developed by Speer to match every mechanical and electrical service characteristic.

All have been rigidly tested under actual service conditions.

For smooth, trouble-free commutation . . . for peak motor performance . . . fit your motors with Speer carbon brushes.

Speer
CARBON COMPANY
ST. MARYS, PENNA.

brushes - contacts - welding electrodes - graphite anodes - rheostat discs - packing rings - carbon parts
CHICAGO - CLEVELAND - DETROIT - MILWAUKEE - NEW YORK - PITTSBURGH

BUY AMERICAN

TUBULAR AND SPLIT RIVETS

Available in all metals for all industrial needs.

AMERICAN RIVET CO.
849 N. Kedzie Ave., Chicago 51, Ill.

(Continued from page 150)

Conn.; The Cleveland Chain & Mfg. Co., Cleveland, O.; Round California Chain Co., San Francisco and Los Angeles, Calif.; The Round Chain & Mfg. Co., Chicago, Ill.; Seattle Chain & Mfg. Co., Seattle, Wash., The Southern Chain & Mfg. Co., Birmingham, Ala.; Woodhouse Chain Works, Trenton, N. J.

No. 127—For further information see Page 19

Lighting Fixture Yoke



For application in industrial plants, public halls, gymnasiums, and similar structures that utilize high-level lighting systems, Thompson Electric Co. has brought out a new yoke assembly for suspending two pendant-type lighting fixtures from a disconnecting and lowering hanger. This suspension yoke permits operation of lights of different types, sizes, and/or weights from a common outlet. Thompson says it is especially recommended for mercury-incandescent combinations. When necessary or desirable, a suspension-type transformer can be used with the yoke assembly. Maximum capacity, transformer included, is 110 lbs. Catalog No. 50 gives complete details. Thompson is at 1101-78 Power Ave., Cleveland 14, O.

No. 128—For further information see Page 19

Thread Restorer

A thread restorer that can be used to recondition closely spaced studs and bolts that are battered, distorted or rusted is the latest product in a line of tools made by Buckingham Manufacturing Co., Inc., Travis Ave. and Bevier St., Binghamton, N. Y. It completes a range of sizes which take care of all ASME and SAE standard threads from $\frac{1}{4}$ " up to 4" diameter. With a swing of only 2- 5/16", the thread restorer works readily in close quarters, on almost every male thread, whatever its location, the maker states. Adjustable cutting jaws can be fitted by a simple twist of the handle to any male thread of $\frac{1}{4}$ " to 1" root diameter, either right or left hand. No. 129—For further information see Page 19

(Please turn to page 156)

Green Stuff



It's a long way to the National Open, sonny, but you can make it! It takes lots of skill and experience to make a good golfer, to make a good product, and to sell a good product. Chase salesmen have expert knowledge in the bag business—as it applies to your business. Why not call one in today? He'll be eager to analyze your needs, and recommend a container that protects your product, that advertises your product, that helps increase the sale of your product. There is no obligation, of course.



Bags for all industry and agriculture

- cotton bags of all kinds • Topmill burlap bags
- paper & Multiwall bags • Saxolin open mesh bags
- combination bags, liners, and specialties.

CHASE BAG CO.

GENERAL SALES OFFICES, 309 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • HUTCHINSON, KAN. • CROSSETT, ARK. • SAN FRANCISCO

Threadwell Tools do many jobs



they can do your tough ones

Solving your gaging and cutting tool problems is easier than you think. Threadwell Field Engineers are located all over the country to help you. Get their names by mailing coupon below.

THREADWELL TAP & DIE CO., Greenfield, Mass.

Please send me the name of the Threadwell Field Engineer and the Threadwell Distributor nearest me. I am also interested in the literature checked below.

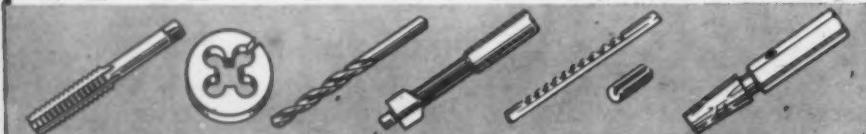
Name _____ Pos. _____

Company _____

Street _____

City _____ Zone _____ State _____

Taps Dies Drills Counterbores Keyway Broaches Gages



Threadwell

Label Addresser



A new system for making multiple labels for shipments that go forward in several packages is being marketed by Master Addresser Co., 6500 W. Lake St., Minneapolis 16, Minn. As shown in the top part of the photograph, the Lab-L-Master is pressed into place on a shipping order or bill of lading, before the name and address of the consignee is filled in. Pressure sensitive adhesive holds it in place. The order is made out, and the name, address and order number is typed or written right on the Lab-L-Master. A carbon impression of the address appears on the shipping order. The master sheet is placed in the printer (below), which can be rolled across a label or tag. Will print up to 200 copies, as fast as 30 a minute. No stencils, plates, ribbon or ink are required. Printing area is 1 1/4" x 3 1/4".

No. 130—For further information see Page 19

Torches

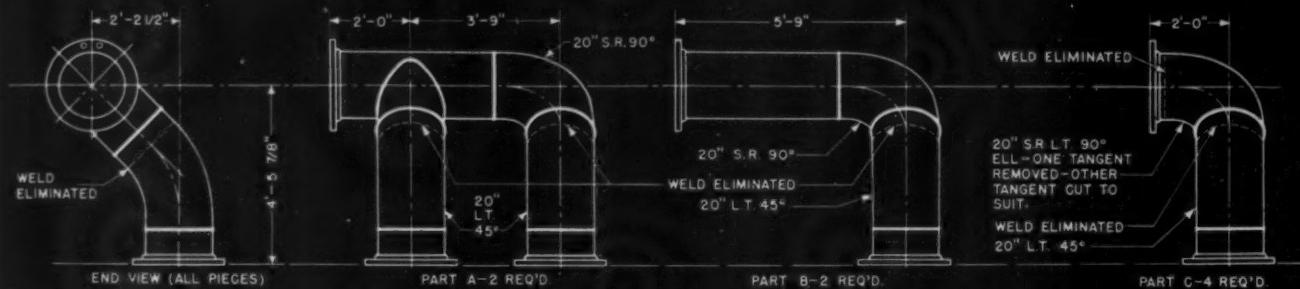


Outstanding improvements in the design and construction of torches have been announced by Otto Bernz Co., 276 Lyell Ave., Rochester, N. Y. Torch at left is the first made of aluminum and features 40% lighter weight, and elimination of soldered bushings on pump and burner joints, making joints completely leakproof. Production economies of functional design permit it to be priced lower than any comparable model, Bernz states. At right is the improved brass and steel model. Stronger, flared tank design results in greater fuel capacity and weight balance at any fuel level. Bakelite pistol-grip handles are said to afford easier handling, better balance and more efficient use.

No. 131—For further information see Page 19
(Please turn to page 158)

COST REDUCTION.

in these
piping designs



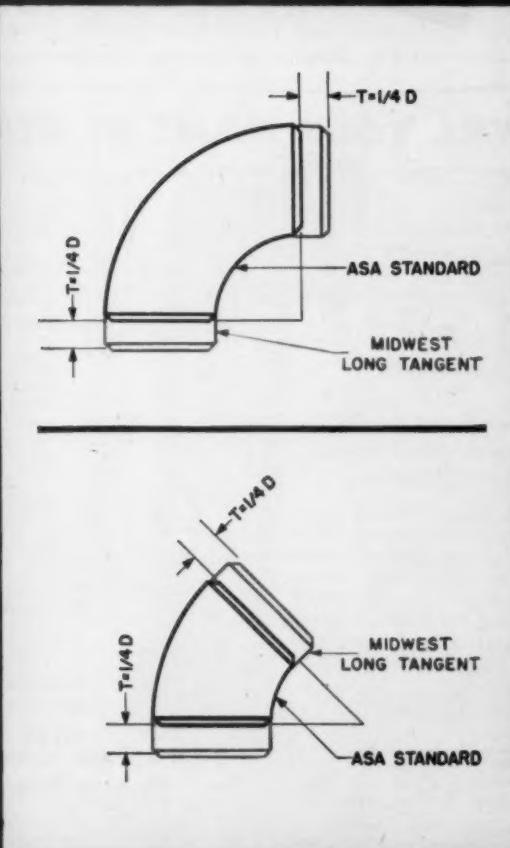
WELD ELIMINATED
20" LT. 45° PIPE SAW

MIDWEST

There was a definite example of the savings in pipe welding by using Midwest Long Tangent fittings. They are a 12% reduction in cost per fitting.

Even at the reduced cost there is no reduction in quality. ASA fittings would have required an extra coupling with a tangent at the stated bend. With the Midwest Long Tangent, both the nipples and the fittings are of standard ASA material and follow ASA codes for strength and safety.

Other advantages of Midwest Long Tangent fittings are speed and saving found in modern piping practices. The use of prefabricated components, shop welding and assembly, greatly reduces field welding time and costs.



MIDWEST WELDING FITTINGS
Improve Piping Designs
and Reduce Costs

MIDWEST DIVISION OF MIDWEST SUPPLY CO.

1000 GLENWOOD AVENUE • DALLAS, TEXAS 75202
TELEGRAMS: MIDWEST • CABLE ADDRESS: MIDWEST
TELEPHONE: 941-1111 • FAX: 941-1111

SURPRISING SAVINGS



**Reported by Users of
STANDARD PNEUMATIC
TUBE SYSTEMS**

SAFE — SWIFT DELIVERY BY "AIR" OF MESSAGES — MONEY — MERCHANDISE!

Savings as high as \$10,000 in 9 months' time are reported by users of Standard Pneumatic Tube Systems — filling orders, moving merchandise, money, messages, records, between departments. Reduce messenger and telephone service. Can be installed for a wide range

of needs in stores, warehouses, manufacturing plants, offices. Write for Bulletin No. 11 and complete information — address Dept. P-120.

STANDARD CONVEYOR COMPANY
North St. Paul 9, Minn.



Write for
Bulletin No. 11
— Standard
Pneumatic Tube
Systems. Address
Dept. P-120



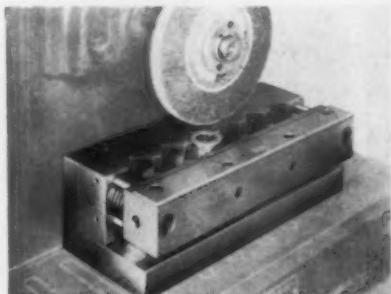
Steam Cleaner



Kelite Products, Inc., says its new HD Model S steam cleaner is a super-power unit unequalled in performance or economy of operation. It has a rated capacity of 260 gallons of solution vaporized per hour. This results from a Kelite development called the "water wall", composed of 42 feet of tightly coiled $\frac{3}{4}$ " pipe located at the point of greatest heat radiation. Altogether 330 feet of heavy-duty $\frac{3}{4}$ " pipe is used in the water jacket. This design reduces stack temperature to approximately 400F, said to be one-third less than similar models. Kelite's address is Box 2917, Terminal Annex, Los Angeles 54, Calif.

No. 132—For further information see Page 19

Gang Vises



Dery Tool & Die Company, Pine Meadow, Conn., has introduced two new gang vises for precision grinding of small parts. Dery says the vises, which are available in three and six position models, handle the most intricate grinding jobs and speed up operations. Both models incorporate patented equalizing blades which automatically compensate for differences in work tolerances and eliminate "toeing in" of undersize parts. The three position model is designed primarily for use with a magnetic chuck but may be had with modifications for clamping to conventional chucks. The six position vise is for use on magnetic or non-magnetic chucks. The new gang vises, manufactured to users' specifications are fully described in new literature.

No. 133—For further information see Page 19
(Please turn to page 160)

WILL YOUR NAME BE REMEMBERED?

**GITS
Quality
Plastic Products**

Cement friendship and
esteem—to bring a warm
glow of remembrance!
The cost is small . . .
the value high!

**GITS
"Super Right Angle"
Unbreakable Plastic
FLASHLIGHT—**

one of the famous "Mile of Light" Flashlights. Nickel plated brass, lacquered, perfect parabolic reflector gives a strong beam of pre-focused light. 3-way "ON-OFF" and signaling switch always works. Transparent or lustrous colored case.



GITS "ONE-HAND" KNIFE
Highest quality carbon steel blade, safelocks in 5 positions. Unbreakable plastic handles in six lustrous colors.

GITS RAZOR-NIFE AND KEY CHAIN
Razor blade with a safety handle. Refillable. Assorted lustrous colors.

GITS LETTER OPENER
Transparent, with offset magnifying handle. Endurably sharp edges.

PAR-KIT No. 377
Ingenious combination of wind shield ice scraper, key chain and coin holder. Holds 2 nickels and 2 pennies—always ready for parking meter.

ASK your specialty jobber to show you the complete line of Gits Quality Plastic Products, or write direct, using coupon below.

GITS MOLDING CORP.
4640 W. HURON STREET, CHICAGO 44, ILL.

Gentlemen:

Please send me at once sample of the item I have checked below and prices in

quantity.

Plain With imprint

"Plastic Eye" Flashlight

"Plastic Eye Jr." Flashlight

"Super Right Angle" Flashlight

"One-Hand" Knife

Razor-Nife and Key Chain

Letter Opener

Nail File

Thimble

Stir Stix

Bracelet Key Holder

Shoe Horn

Key Tag

Match Pac

Par-Kit

The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information. (PLEASE PRINT)

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

ADD FLEXIBILITY TO YOUR SURFACE GRINDERS WITH

EX-CELL-O

PRECISION SPINDLES



Ex-Cell-O 1 horsepower, 3600 rpm inbuilt motor spindle for surface grinder. Spindle swivels vertically, is used for sharpening cutters and broaches.

Standard horizontal Ex-Cell-O Precision Spindle with 1 horsepower, 3600 rpm inbuilt motor for surface grinders. Standard Ex-Cell-O belt-driven spindles also are available for this type of grinder.

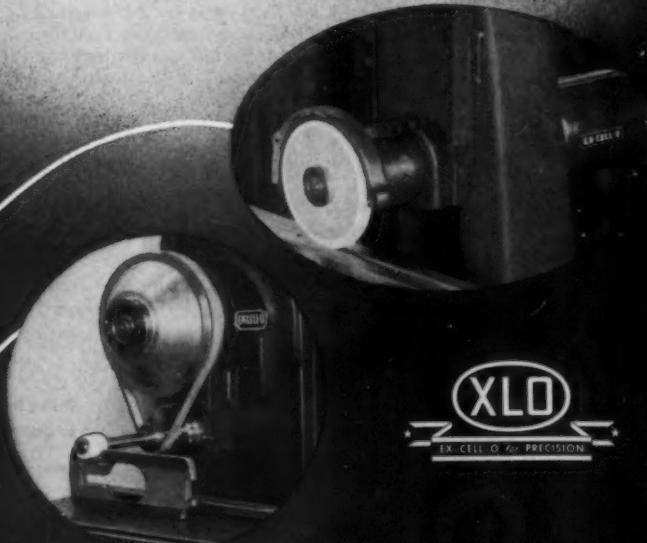
This Ex-Cell-O High Speed Attachment drives small wheels at 18,000 rpm. It is driven by the standard motorized spindle and is supported by the standard spindle or spindle bracket.

You can add to the flexibility of your surface grinders, and perhaps save the cost of another machine, with Ex-Cell-O spindle equipment. For instance the large photo at left shows an inbuilt motor spindle that swivels vertically. It makes a standard surface grinder suitable for sharpening cutters and broaches. A mounting member extends through bore in column that ordinarily houses the standard horizontal spindle.

The Ex-Cell-O High Speed Attachment also adds to the flexibility of surface grinders. This attachment mounts on the standard horizontal spindle or spindle bracket. The standard surface grinding wheel is replaced by a pulley that, through a flat belt, drives the high speed spindle at 18,000 rpm. Thus, small wheels can be driven at an efficient speed for grinding small shoulders, slots and other hard-to-reach places.

For rigid, smooth-running spindles that require no further lubrication or adjustment, and produce fine work day after day, contact your Ex-Cell-O representative or write to Ex-Cell-O Corporation in Detroit.

Send today for Ex-Cell-O's free Precision Grinding Spindle Catalog, Number 25962. No obligation, of course. Just use your company letterhead.



EX-CELL-O CORPORATION

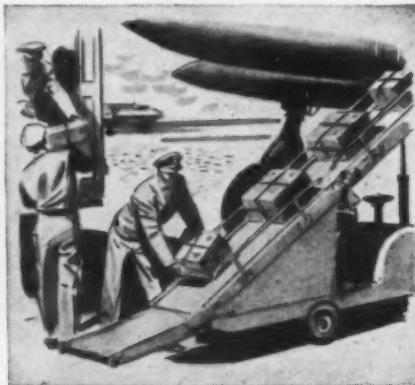
DETROIT 32
MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS
DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

Completes 300 TV sets— meets daily quota (at a cost of \$4.70)



Delicate coils were needed by Midwest manufacturer to complete 300 TV sets . . . and Massachusetts supplier was 920 miles distant! Air Express assured delivery by 8 o'clock next morning, so manufacturer ordered 500 men to report for work. Shipment arrived 7:20 A.M.—production rolled! Shipping cost for 17-lb. carton only \$4.70! Manufacturer uses Air Express regularly to keep business in high gear.



\$4.70—and special pick-up and delivery included! Low Air Express rates cover door-to-door service. More convenient—easy to use. Just phone for pick-up! (Many low commodity rates in effect. Investigate.)

Air Express goes on all flights of Scheduled Airlines. Shipments keep moving around the clock—speeds up to 5 miles a minute. Experienced handling. Phone Air Express Division, Railway Express Agency, for fast action.

Air Express gives you all these advantages:

World's fastest transportation method.

Special door-to-door service at no extra cost.

One-carrier responsibility all the way.

1150 cities served direct by air; air-rail to 22,000 off-airline points.

Experienced Air Express has handled over 25 million shipments.

AIR EXPRESS
GETS THERE FIRST

Rates include pick-up and delivery door to door in all principal towns and cities

A service of
Railway Express Agency and the

SCHEDULED AIRLINES of the U.S.

Want Additional Product Information? See Page 19.

Chatterless Countersinks



Severance Tool Company, 672 Iowa St., Saginaw, Mich., has grouped four of its most used sizes of countersinks in a convenient flat wood case that will fit into standard tool-box drawers. Diameters of countersinks in the set are $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{3}{4}$ ". They are available from stock in 30° , 41° , 45° , or 60° , C/L angles. Made of high speed steel, they cut fast and clean on a wide range of materials, and take light or heavy cuts while producing smooth, accurate seats. Generous body length permits each countersink to be reground a great many times.

No. 134—For further information see Page 19

Floor Dust Control



In the photograph above, the hand at left was rubbed across an ordinary untreated floor. The hand at right was rubbed over a section of the same floor treated with Antiseptic Westone, a product of West Disinfecting Company, 42-16 West St., Long Island City 1, N. Y. West says the product not only removes dust from floors, but leaves an antiseptic film which inhibits the growth and multiplication of the bacteria present. Its surface-sealing film holds down subsequent dust for quick and easy removal. The sealing action is said to be of particular value on new concrete and wood areas, which, if not properly treated, give off dust long after they are laid.

No. 135—For further information see Page 19



Give living a lift...with Steel!!



Plain or fancy, large or small . . . the living area *outside* a home can be planned to give a big bonus in pleasure.

And the outdoor furnishings needed to execute such plans are plentiful, durable and reasonable . . . because they're made of steel. Steel is America's great bargain metal for modern living.

As a matter of fact, even the siding of the home above is steel. That's a brand new idea in building . . . siding panels of Weirzin electrolytic zinc-coated steel that resist rot, fire, termites, fungus and corrosion; provide a wonderful base for paint; safeguard home beauty and reduce maintenance costs.

No other metal—only steel—can give you so much for so little.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

metal sculpture, executed in Weirzin steel, demonstrates exceptional workability of this easily fabricated metal.



*When You Specify
SOLVAY Products
for Paper ...*

... you get the ultimate in quality—the kind of quality you would expect from America's leading producer of alkalis. But in addition, you get the fast, dependable delivery service which can only come from a company having more than one plant . . . and over 200 local stock points from coast to coast. You also get Solvay's exclusive Technical Service . . . men specially trained in the paper industry.

SOLVAY SALES DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.



**PRODUCTS
for the
Paper Industry**

CAUSTIC SODA

**Liquid
CHLORINE**

SODA ASH

**AMMONIUM
CHLORIDE**

**CALCIUM
CHLORIDE**

Soda Ash • Caustic Soda • Caustic Potash • Chlorine • Potassium Carbonate • Calcium Chloride • Sodium Bicarbonate • Specialty Cleaners • Sodium Nitrite
Nytron • Ammonium Bicarbonate • Para-dichlorobenzene • Ortho-dichlorobenzene • Monochlorobenzene • Methanol • Ammonium Chloride • Formaldehyde

PURCHASING

DECEMBER, 1950

OFFICE EQUIPMENT and SUPPLIES



PURCHASING MAGAZINE — A CONOVER-MAST PUBLICATION
205 EAST 42ND STREET, NEW YORK 17, N.Y.

Color Television Featured at Business Show

**Purchasing Agents Find Exhibits and Demonstrations
of New Office Machines and Furnishings Source
of Practical Ideas for Increasing Office
Efficiency**



Remington Rand CBS Compact Color Television Camera

INDUSTRIAL purchasing agents and buyers were numerous among the thousands of business men and business machine and supply dealers who visited the National Business Show which was held under direction of the Office Executives Association of New York, in Grand Central Palace, New York City, October 23 to 28. Among these was the purchasing agent of one of the nation's largest industrial organizations who had instructed each member of his buying staff and others to examine the numerous exhibits at the show for information about new equipment, appurtenances and supplies that were the basis of increased efficiency and productivity not only in the purchasing department but in the many other departments and divisions of his company which has plants throughout the country.

Purchasing agents explained that from one to three percent of their annual expenditures were for business machines, desks, files, stationery, forms and the innumerable ac-

cessories that are to be found in the average office, the total for some companies running into six and seven figures. The consensus was that the modern mechanized office with electronic and electrically operated equipment ranging from pencil sharpeners to typewriters, duplicating machines, and dictating and transcribing equipment, played a most important role in management, production, sales, procurement and other operations.

New levels of efficiency and accuracy and increased office production are made possible by modern equipment, making for lower costs, and smoother and more effective paper procedures throughout an organization, one purchasing agent explained, hence he felt it necessary that his buyers be informed of new developments in old as well as competitive lines. Another stated he found it well worth while to watch developments in such things as file cases, desks and posture chairs, for the new equipment not only was a factor in improving office efficiency

Wheeldex card record system handles 80,000 cards.

This unit collates two to 10 pages.





Professional File introduced by Cole Equipment Company.

but employee morale.

That the Business Show had much to offer its visitors, is evidenced by the fact that there were more than 180 exhibits occupying two floors of the Grand Central Palace. The exhibits were well diversified, and evidenced the tremendous progress that has been made in mechanizing and electrifying the office, and increasing the functional values of office equipment.

Among the major attractions was the large Remington-Rand exhibit which featured a color television system for business use known as the Remington-Rand-CBS Vericon, or Vericolor. The color system, it is felt has a big potential in industrial and general business activities, and in various professional and educational lines. By means of the system, executives facing a Vericolor television camera in Chicago or New York, for example, can present in full color and natural tones over closed circuit coaxial cable, their complete message to the field sales staff gathered in groups before tele-

vision receivers at any number of regional centers. Such a plan would obviate the usual expensive program of calling in representatives and others of national organizations to a central point from all over the country.

The present exception is that coast-to-coast relays must wait for completion of the coaxial cable, which is due near the end of 1951. Currently, service can be arranged eastward of Chicago. The equipment used is light, compact and simple to operate. Colors, pictures and sound are sharp and clear.

In addition to electric typewriters, a new line of adding machines and calculating machines, and other equipment, Remington-Rand also demonstrated a modified replica of the Univac, or electronic computer in connection with a "memory tube", an internal register which retains up to 1200 "memories" at one time, the latter being a new development in electronics. The Univac itself adds, subtracts, multiplies and divides at incredible speeds, sorts and collates information, and other operations. The company also demonstrated the Conve-Filer, a mechanical card-filing unit which handles large-scale filing electrically.

Electronic Stencil Cutter

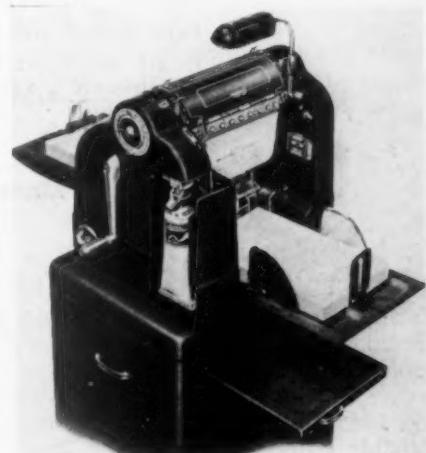
Another exhibit which commanded a great deal of attention, presented the new Times Stenafax in operation. This machine automatically cuts exact stencils of graphic material in the short time of six minutes, and provides users of mimeograph machines with the means to reproduce business forms, drawings, maps, graphs, etc. The stencils are cut on special plastic sheets, which may be used on standard machines.

The Olivetti calculator, made in

Italy, was demonstrated by the Atlas Business Machines Corporation of New York City. This calculator multiplies automatically, divides automatically, printing all factors and results on a tape. It incorporates all the features of a high-speed, high capacity adding-subtracting-listing machine with automatic credit balance.

Among the rotary files was that of the Ferris Manufacturing Co., Stratford, Conn., featuring remov-

(Please turn to page 168)



Packaged ink is vacuum fed to dual cylinder printing system of duplicator.



Olivetti typewriter and calculator



Automatic Electric Stapler permits free use of hands.



Intromat bookkeeping device on Hermes semi-electric typewriter.

—Modernize—

YOUR CATALOG AND BULLETIN FILES

Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 22, and 24!

— When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.—

71. BOOKKEEPING — Full information on Vertical Visible, Rollomatic, Ring-Master Visible, and new size posting tray and other equipment, is given in folder on Machine Bookkeeping and Visible Equipment, available from National Blank Book Co., Holyoke, Mass.

72. NUMBERING, DATING MACHINES — New catalog No. 50 covers line of hand numbering and dating machines, and Rapid-print line of time, number and date machines. Chart shows types of figures available. There is also parts list for the hand machines, and section on accessories including ribbons, motors, die plates, etc. for the time, number and date machines. Roberts Numbering Machine Co., 700 Jamaica Ave., Brooklyn 8, N. Y.

73. TALK-A-PHONE — Literature illustrates and describes the new Redi-Power Talk-a-Phone, two to 40 station capacity. The "Chief" Talk-a-Phone permits some staff stations to be used as private, and others as non-private in the same system; also allows conferences between group of stations, or talking with five or more persons at one time. The Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago 23, Ill.

74. KARDEX CONTROL — Kardex Visible Record Control is title of 80-page illustrated booklet which explains the Kardex principle and Graph-A-Matic Control and Computing, for facts on sales,

ledger, inventory. Color illustrations show forms and equipment in detail. Management Controls Divn., Remington Rand, 315 Fourth Avenue, New York, N. Y.

75. PAPERWORK SIMPLIFICATION — "Paperwork Simplification" gives detailed case histories containing many ideas you can apply—procedures, office production, form design. Ask for copy. The Standard Register Co., 411 Campbell St., Dayton 1, Ohio.

76. ELECTRIC FORMSWRITER — Folder describes the IBM electric formswriter, which is designed to prepare all continuous fanfold and open-web forms with

ease. It is all-electric in operation. Carbon shifting feature enables repetitive use of either sheet carbon or a carbon pack. Electric Touch Decimal Tabulation keys can be added to the keyboard. Also; the typewriter can be equipped with palm tabulator key. International Business Machines Corp., 590 Madison Ave., New York, N. Y.

77. FAN COVERS — Electric fan cover of Vinylite plastic, will demonstrate the value of the Belle-Vue fan covers for protecting your office fans when not in use. Covers are waterproof, dust-proof, crackproof, and flameproof. Sample on request. Budlew Products Co., 20 E. Jackson Blvd. Chicago, Ill.

READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save Multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

Reader Service Dept.
PURCHASING Magazine
205 E. 42nd St.,
New York 17, N. Y.

NOTE: This service also applies to all the new products, equipment and supplies listed on pages 128-162.

78. MICROFILM READER — Booklet describes the Film-A-Record Electronic microfilm reader. Reader provides controlled illumination and exceptional viewing contrast. Choice of two magnifications-20 to 1, or 35 to 1-by simple exchange of lens. Management Controls Reference Library, Room 1748, 315 Fourth Avenue, New York, N. Y.

79. FILES — "How to Simplify Your Files and Filing Systems" is subject of new 40 page booklet released by Remington Rand Inc., 315 Fourth Ave., New York, N. Y. The booklet is based on the premise that many time saving, work saving filing techniques are often unknown by the average file clerk.

Great NAMES IN INDUSTRY

Known by all...and always wanted. Complete Morris desk equipment still leads the field!



MORRIS FOUNTAIN PENS. A mark of distinction. The utmost in writing efficiency with streamlined, smart appearance. A balanced pen for long hours of comfortable writing...has 5 different quick "thread-in" replaceable points for every purpose. Choice of eight colors.



MORRIS DIP SET. The "all-round" writing implement. Same Morris quality and appearance. Satisfies routine workers and demanding executives alike with instantaneous, efficient, smooth writing. No refilling or flooding...holds many months supply of ink. Choice of nine colors.



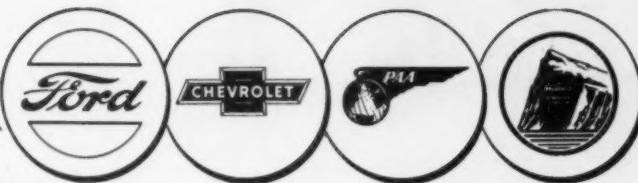
MORRIS MEMO PADS. A "must" on every desk...for the home phone too. Paper is readily accessible, yet always kept neat by either gold plated bar that drops as paper is used, or plain "boxed-in" corners. Plenty of room for imprinting here. Excellent premium or advertising specialty. Choice of matching colors.



MORRIS LETTERTRAY. Masterfully designed and engineered for every requirement. Two point suspension allows complete freedom of access from the entire front and sides. Easily adjusted for a single or double desk. Strongly constructed tiers are quickly added, either letter or legal size.



MORRIS ASH TRAY. The executive ash tray that's plenty large enough for the heavy smoker, yet easily fits most every desk—perfect for the conference table. Glass liner is removable for quick cleaning. Sturdy STYRON base is available in grained Walnut, Mahogany, the new steel Gray or Bronze to match newest styles.



Great DESK EQUIPMENT

Many famous users of Morris desk sets have their seals or emblems imprinted in gold.

MORRIS

desk equipment does "double-duty"

The quality of Morris desk equipment exceeds that which is merely grand:

"**DOUBLE-DUTY**" either as individual items or...a "Morris-matched" desk set, the sign of an efficient executive. The complete desk setting shown, pen set, memo pad and holder, "lettertray" and ash tray, retail for little more than the cost of one higher priced, yet comparable fountain pen set.

Quality, efficiency and years of service have made Morris desk equipment the choice of exacting business men.

MORRIS-MATCHED DESK SETS THE SYMBOL OF GOOD TASTE IN DESK EQUIPMENT

If your dealer does not stock the items you wish, write Dept. PUR 12



MORRIS PHONE REST

The easily adjusted phone rest that holds the phone in place without crimping your shoulder or straining your neck. For the Executive, the Secretary or the home. Have both hands free, saves time, makes life easier. Perfect as a premium.

BERT M. MORRIS CO. 8651 W. Third St., Los Angeles 48, Calif.



**for MULTIPLE COPIES
FACTORY AND OFFICE FORMS
DIRECT MAIL STUFFERS
SPACE-SAVING RECORDS
AIRMAIL LETTERHEADS**

Thin, crisp, Sea Foam Bond can standardize lightweight office and factory forms at sizeable savings in time AND money. As America's favorite thin business paper, it serves all your office and factory paper needs.

Sea Foam's lightness cuts down postage—gives you EXTRA SHEETS per pound. Sea Foam's thinness permits many clear carbon copies at one typing. Saves on file space, too. In 7 bright routing colors to keep your record system straight.

**Write for
SEA FOAM'S
FREE Test Kit**

Show you just how good Sea Foam is for all thin paper needs! Write on your company letterhead.

BROWNVILLE PAPER COMPANY
The Mill of Fine Lightweight Papers
28 Bridge St., Brownville, N. Y.



COLOR TELEVISION FEATURED AT BUSINESS SHOW

(Continued from page 165)

able baskets in balanced trays that rotate either way by fingertip control. The file has capacity for up to 13,000 cards in the standard model, and occupies three square feet of floor space. A handbrake locks the wheel in any desired position even after several trays are removed. Other features include an attached posting shelf which folds out of the way when not in use, and a follower-block for tabulating cards.

Card Record Systems

The Wheeldex Manufacturing Co., Inc. of White Plains, N. Y., makers of the Wheeldex card record systems, featured its products, these ranging from the "Cub" portable desk unit, to complete systems handling hundreds of thousands of cards.

The Dupli-Typer Company of 460 Fourth Ave., New York, N. Y., demonstrated the Dupli-Typer Unit which eliminates the use of carbon paper. It is a light steel frame which rests on the typewriter platen and carries inked ribbons positioned between the forms. It is said to be a time and money-saver.

Another interesting device was an automatic electric stapler introduced by the Thomas Mechanical Collator Co., 30 Church St., New York, N. Y., which leaves the operator's hands free for other work. The device has no motor, or hand or foot controls, utilizing electrical developments for the automatic operation.

And of interest also was the DSJ Varityper machine made by the Ralph C. Coxhead Corp., Newark, N. J., known as the cold-type machine which can be used for ruling forms and leader lines while composing the typography at the same time. Making of lines a specific length is entirely automatic. It takes the operator but a few minutes to make an accurately ruled form complete with "printed matter".

Itkin Bros., Inc. of New York City, featured the Arnot functional furniture office group, in a large display of office furniture. This furniture, developed under license from E. I. DuPont deNemours & Co., solves the problem of providing privacy for specific workers in large open office areas, without the use of permanent partitions. Basic unit is a desk interlocked by concealed attachments to independent panels. Space saving by the use of the sys-

tem is placed at 30%.

Diebold, Inc., Flofilm Division, Rockefeller Plaza, New York City, displayed a new 14-inch Flofilm Duplex Camera for microfilm work. It is designed to microfilm at one feeding either one side or both sides of any copy up to 14 inches wide and of any length. It feeds copy as fast as 500 bank checks per minute, recording on either 16 mm or 35 mm film at choice of 3 reduction ratios—21X, 26X and 36X.

Paillard Products, Inc., 265 Madison Ave., New York, N. Y. displayed the Hermes semi-electric typewriters and the Intromat, the latter a device for converting the typewriter into a bookkeeping machine which accepts forms of different widths which can be handled simultaneously. Any two forms can be typed simultaneously without carbon paper because the Intromat is equipped with a special second ribbon attachment. Visibility of forms is insured by Plexiglas feed plates.

Other Interesting Exhibits

Space does not permit detailing many of the exhibits. Numerous companies showed duplicating and copying equipment for black and white and precision color work. There was a small mimeographing device known as the Print-O-Matic, a low price machine, for printing post cards, or cards up to 4" x 6" at the rate of 2000 copies per hour. Collators, automatic typing machines, communication systems, dictating and transcribing recorders, calculating and adding machines, and numerous office accessories, drew considerable attention. And, there was also a model office practice room and typewriting room, fitted with the latest office equipment including manual and electric typewriters, dictating and duplicating machines, calculating machines, and so on. There was also a display of an automatic collator capable of assembling eight sheets of paper at a time. And lastly, but by no means least, the Dormiphone, an instrument that teaches while you sleep. While a person sleeps, recordings of the material to be learned, such as foreign languages, scientific formulae, mathematical data, codes etc., are repeated automatically. According to the Linguaphone Institute, the information "sinks into the subconscious" and there is no loss of rest.

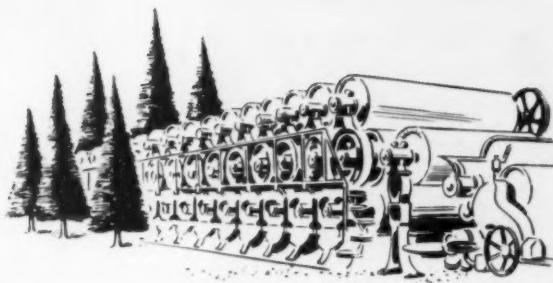
*What every
PA
should know
about*



NIBROC means

a fast towel delivery service. Nationwide distribution and high mill production put these towels in your hands when you need them.

Nibroc® - World's largest selling towel for Industrial and Institutional Use



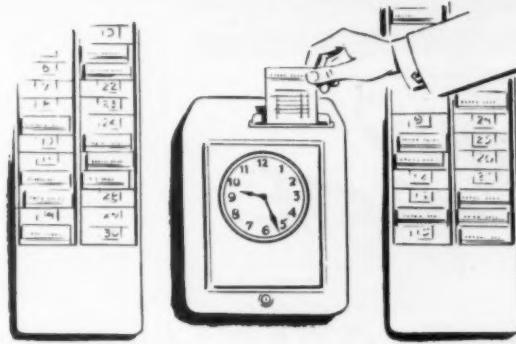
NIBROC means

a dependable supply of quality towels year in and year out—made by one company from timber-cutting to finishing. One Brown Company machine alone, called "Mr. Nibroc," can produce nearly 30 million towels a day.



NIBROC means

modern, sanitary drying. Individual towels help prevent spreading of infection and colds, help reduce absenteeism.



NIBROC means

quick drying towels. No time-consuming gadgets to fuss with. Reduces time spent in washroom. Gets employees back on the job faster.

Sparkling white Nibroc cabinets in your washroom mean fresh, soft, absorbent, lint-free personal towels for everyone. And Nibroc dependable service offers you a wide range of towels—singlefold and multifold, white or buff—to meet every washroom requirement.

Send coupon today for samples and name of your local Nibroc distributor.

Nibroc® TOWELS
A PRODUCT OF  **BROWN Company**
Berlin, NEW HAMPSHIRE

GENERAL SALES OFFICES: 500 FIFTH AVENUE, NEW YORK 18, N. Y.
Branch Sales Offices: Portland, Me., Boston, Chicago, St. Louis, San Francisco, Montreal
SOLKA & CELLATE PULPS • SOLKA-FLOC • NIBROC PAPERS • NIBROC TOWELS • NIBROC KOWTOWLS • BERMICO SEWER PIPE, CONDUIT & CORES • ONCO INSOLES • CHEMICALS

NIBROC TOWELS
GET YOU BONE DRY



BROWN COMPANY, Dept. P12
500 Fifth Ave., New York 18, N.Y.
Please send me samples of Nibroc towels and information about Nibroc Dependable Towel Supply Service.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Exclusive Redifixt Features

W-2

1950 TAX FORMS

IN STOCK AT LOWEST PRICES

Federal • State • Social Security

N. Y. FORM 105

for

TABULATOR-N.C.R.-ADDRESSOGRAPH

NEW STANDARD Redifixt BUSINESS FORMS

CONTINUOUS SINGLES INVOICES—CHECKS BILLS OF LADING

NO QUANTITIES TOO SMALL

FAST DELIVERIES

PRODUCED ON POST WAR ROTARY PRESSES

CONSOLIDATED BUSINESS SYSTEMS, INC.

30 VESEY ST., N.Y. 7, N.Y., DEPT. 606

GOOD TASTE in ENVELOPES



only
Sheppard has
the
MINT-E-SEAL
Flavor-Flap

Sheppard ENVELOPES

1 ENVELOPE TERRACE, WORCESTER 4, MASS.

PRIVATE LOCKERS FOR INSULATED RECORD FILES

Two different styles of lockers may be substituted for one or more of the standard file drawers to create private, locked compartments in insulated record files announced by the Herring-Hall-Marvin Safe Co., Hamilton, Ohio. The lockers



Features include Underwriters Class C 1-hour label, including drop test, Underwriters T-20 burglary label, and key lock in door handle for daytime convenience

are formed by installing steel doors securely anchored to the files in the file drawer openings. The light steel locker, equipped with a key lock, is furnished without extra cost. The heavy steel locker, equipped with a combination lock, is furnished at the differential for the file drawer omitted. Full information available upon request.

cils has the line only die-impressed into it and the other has both the line and numerals (1 through 32) die-impressed. The numerals are double spaced and located in accordance with standard document spacing.

With these new stencils and modern mimeograph equipment both labor and material costs are reduced and high quality copies are obtained. Only one typing and one proofreading are required and as many copies as are needed can be produced from one typing. Corrections are made much more easily and quickly on stencils than on normal correspondence, carbon paper is not needed and less expensive paper may be used. Stencils may be filed and re-run if additional copies are needed later. This eliminates future re-typing and proofreading.

Sample copies of documents produced from these stencils may be obtained from A. B. Dick Company, 5700 West Touhy Avenue, Chicago 31.

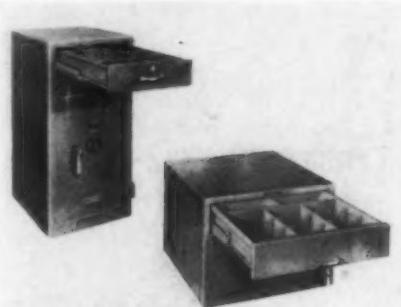
1 1 1

MASTER CATALOG RELEASED BY BLOCK & COMPANY

Publication of a new 292-page master catalog is announced by Block & Company, 216 South Wabash Avenue, Chicago 4, Ill., stationers, office and shop equipment supply house. It is termed a reference book that purchasing agents and others will find a valuable reference guide. Copy available on letterhead request.

1 1 1

LOCKER TYPE CASH GUARDS INTRODUCED BY H-H-M



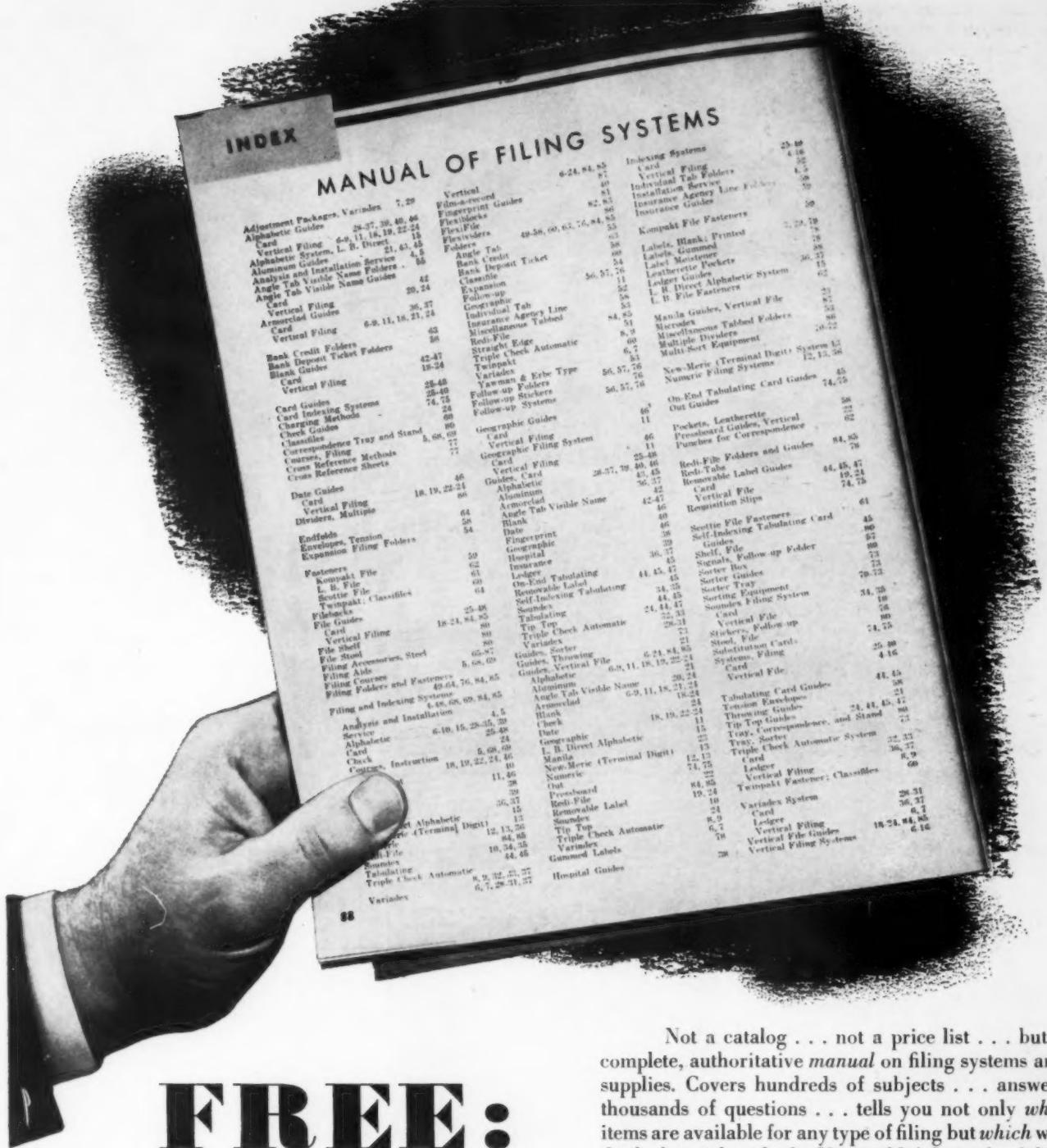
Two new Counter Cash Guards have been announced by the Herring-Hall-Marvin Safe Co., Hamilton, Ohio, which are designed to outwit bandits, for it is impossible for cashiers to open the reserve compartment of the cash guards in less than the 15 to 30 minutes delay period for which the lock is set. Bulk funds are kept under delayed control timelock protection in the reserve money compartment built under the cash drawer. Incoming cash is placed under protection automatically by putting it in a special section of the cash drawer, from which it is deposited into the locked reserve compartment each time the cash drawer is closed. When the cashier needs more money, he anticipates his requirements by the length of the delay period, opens

(Please turn to page 172)

LEGAL DOCUMENT STENCILS ANNOUNCED BY A. B. DICK CO.

Two new mimeograph stencils, especially designed for production of multiple copies of legal documents, have just been announced by A. B. Dick Company.

These new products eliminate the need for using marginal lined paper as the line is die-impressed into the stencil and it reproduces at the time copies are mimeographed. One of these new stencils



FREE:

The Book That **ANSWERS PROBLEMS**
Re: Filing Systems and Supplies

Not a catalog . . . not a price list . . . but a complete, authoritative *manual* on filing systems and supplies. Covers hundreds of subjects . . . answers thousands of questions . . . tells you not only *what* items are available for any type of filing but *which* will do the best job and *why*. You couldn't buy a book like this from any other source yet it's yours absolutely free—88 pages, profusely illustrated, crammed with practical, money-saving suggestions. Send the coupon today for your copy or phone our nearest office.

Remington Rand

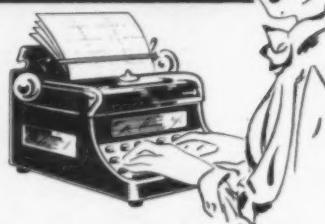
Management Controls Reference Library
Room 1559 315 Fourth Ave., N. Y. 10

Please furnish free copy of Filing Systems and Supplies Manual (LB 385A).

NAME _____	TITLE _____
COMPANY _____	
ADDRESS _____	
CITY _____	ZONE STATE _____

\$ REDUCE ADDRESSING COSTS!

DUPLISTICKERS speed-up addressing, reduce costs, increase efficiency. Typists address 4 or more copies in one operation on letter-size sheets of 33 gummed, perforated labels. Paper is specially made for maximum number of clear copies. Ideal for mimeo and ditto duplicating. Clean, quick-part perforations, uniform stick-fast gumming. Completely trouble-free in every respect. Absolutely foolproof.



Speed-Up Your Addressing with Eureka DUPLISTICKERS

Use "Duplistickers" for addressing all duplicate mailings, direct mail advertising, bulky envelopes, samples, premiums, etc. Postage indicia can be printed on labels for bulk mailings. "Duplistickers" serve dual purpose as address and seal on self-mailers and may be used on return cards. Package of 25 sheets (825 labels) 60¢ at leading stationery stores. White, blue, pink, green, canary, goldenrod, for color-coding.

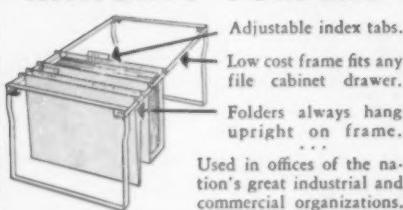
Write for FREE Sample Package

DUPLISTICKERS
are made only by **EUREKA**

Sometimes the word "FILE" is confusing!



HANGING FOLDERS



Used in offices of the nation's great industrial and commercial organizations.

Pendaflex Cuts Filing Costs 20% or MORE!

OXFORD FILING SUPPLY CO., INC. P
Clinton Road, Garden City, N. Y.
Send us your Pendaflex Catalogue, and name of
nearby Pendaflex dealer.

Name.....

Company.....

Address.....

City..... State.....



THIN PAPERS Reduce TYPING, MAILING and FILING COSTS

Use
ESLEECK THIN PAPERS

Fidelity Onion Skin

Clearcopy Onion Skin

Superior Manifold

Esleeck Manufacturing Co.,
Turners Falls, Mass.

(Continued from page 170)

the locker, withdraws the money and re-locks the drawer.

As shown in the illustration there are two models of the Counter Cash Guards, the locker type shown on the right, and the pedestal type on the left.

DAVID ROE ZENNER

David Roe Zenner, president of The McBee Company, passed away in October, in Athens, Ohio of a cerebral hemorrhage. His father, Henry Zenner, founded the McBee Company in 1906 in partnership with Charles McBee. Mr. Zenner was made a director and vice president of the company in 1926, and in 1947 he was elected to the presidency. Besides his wife, he is survived by his two sons, and a brother, Phillip M. Zenner, chairman of the board of the company.

UNDERWOOD "SEE-SET" MARGINS MAKE FOR BALANCED LETTERS



The accompanying illustration shows new front writing scales with which Underwood Standard Typewriters are now equipped, to assist in accurately centering headings and balancing short, medium or long letters on stationery. The new "See-Set" margins have six colored diamond shaped symbols, two red, two yellow and two blue. By setting the visible margins at these indicators, a five, six or seven inch writing line as desired, becomes automatic. Paper centering scales are marked in inches to accurately center any width of paper.

YARD STICK FOR FILING COST AND EFFICIENCY

"A Yardstick for Filing Cost and Efficiency" is title of 22-page study available from Remington Rand, 315 Fourth Avenue, New York, the object of which is to provide management with a yardstick for measuring record keeping as it pertains to filing, its purpose, growth, value, cost and efficiency. Treating of the importance of business records, the report stresses the importance of adequate control, and among other things recites how one large company is saving \$250,000 annually by a modern records management program. The study recites that the cost of creating a letter under present operating conditions ranges from 75¢ to \$1.25, the cost of creating the contents of a (Please turn to page 174)



A REFERENCE FOLDER
Prepared Especially
and Exclusively For
PURCHASING AGENTS

This presentation of basic data on the business forms and mechanical devices manufactured by Standard Register is intended for use by your Purchasing Department.

The information is put together in such a way that the Purchasing Agent can refer to it on instant notice when he receives a requisition for this class of product. We believe it will serve the mutual interests of Purchasing and the forms-using department.

Products are shown in these four categories: *Forms*, marginally punched continuous and Unit Zipsets; *Autographic Registers*; *Form Feeding Devices*; and *Auxiliary Form Handling Equipment*. Other data covers specifications, warranties, delivery, packing, price, terms and service.

This is not a catalog or advertising piece, for general distribution. Our representative asks the opportunity to present it to the Purchasing Agent. We will welcome your request for such delivery of a copy of this Reference Folder.

The Standard Register Co.

412 CAMPBELL STREET
DAYTON 1, OHIO

Associated Companies . . . PACIFIC COAST: Sunset McKee Co., Oakland 6, Calif. CANADA: R. L. Crain Limited, Ottawa, Ont. GREAT BRITAIN: W. H. Smith & Son Ltd., London, England.

INCREASE PRODUCTIVENESS, THIS A. B. C. WAY

Standard Register
Paperwork Simplification



A system of addressing helps cut order-shipping time from several days to a few hours!

Is paperwork somewhere cumbersome, costly? Falling short in smoothing and speeding the performance of business functions? Break it down. Apply work simplification's *scientific method* to each element of the record system.

- A. Develop the best procedure.** SYSTEM of continuous label writing and application guides accurate order picking and shipment in Johnson & Johnson's famous shipping center. (PS. 19)
- B. Simplify the writing method.** Typist prepares 1500 Farmers Cooperative stock certificates a day (against 700) with the aid of AUTOMATIC LINE FINDER. (PS. 19)
- C. Design the most efficient form.** Eastern Air Lines designed 3 labor-saving continuous forms to help mechanize control over employee passes. (PS. 19)

FREE! Ideas you can use in your business. You'll find them in the detailed case histories in our magazine of *Paperwork Simplification* (PS.). Write The Standard Register Company, 412 Campbell St., Dayton 1, Ohio.



KANT-SLIP
continuous forms

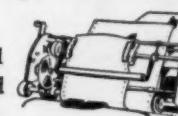


Feeding-aligning devices:
THE REGISTER PLATEN



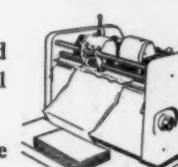
AUTOMATIC LINE FINDER

Advances form into new writing position in one motion



DUAL FEED

Registers 2 different forms for 1 continuous typing operation



BURSTER-IMPRINTERS
Sign, date, number, trim, tear off, stack Kant-Slip forms



FORM-FLOW REGISTERS

Better records . . . by hand



UNIT ZIPSET FORMS
Carbon interleaved

THE VERSATILE PENCIL OF TOMORROW

The Present with a Colorful Future

norma®
MULTIKOLOR
PENCIL

Colors in One Quality Pencil

No finer gift than Norma. Jewelry-crafted, precision-engineered. Guaranteed for mechanical perfection. Appropriately boxed. From \$4.50 up at all the better stores.

PURCHASING MEN find Norma indispensable for speeding the work of checking estimates, plans, specifications . . . Norma makes an excellent gift to build business good will. Write for new booklet showing other uses for 4-color Norma Pencils; no obligation.

**NORMA PENCIL CORP., Norma Building P 2
137 West 14th Street, New York 11, N. Y.**

Please send me, without charge, your new color booklet showing how Norma Pencils help to speed special daily tasks.

Name.....

Address.....

City..... Zone..... State.....

(Continued from page 172)

four-drawer file is placed at \$3,830.40, and the cost of just owning a file cabinet is placed at \$190 per year.

The study contains considerable information of corresponding interest, tells how to determine the efficiency of a filing system, and how better returns can be obtained from the filing dollar.

1 1 1
L. S. GLEAVES JOINS THE SHEPPARD COMPANY



The C. E. Sheppard Company, manufacturers of loose leaf equipment, Long Island City, N. Y., announces the addition of L. S. Gleaves to its organization as vice president in charge of sales. Mr. Gleaves had been connected with the Chas. R. Hadley Company of Los Angeles as Eastern division sales manager and manager of their New York Office. He has spent his business life in the loose leaf industry and has been responsible for many of the modern improvements in the design and application of time saving systems and devices.

1 1 1
UNDERWOOD MARKETS NEW NYLON TYPEWRITER RIBBON

A new nylon typewriter ribbon for sharp, clear-cut typing along with increased wearability is announced by Underwood Corporation. The ribbons are made in 16-yard lengths in black, and black and red combination, with medium and light inkings. The extra length provides extra durability and reduces the necessity of changing ribbons frequently. The sheerness of the nylon fabric permits extra yardage on the spool without overcrowding and the waste at the end of the ribbon is reduced to a minimum.

1 1 1
TWO NEW EXECUTIVE POSTS ESTABLISHED BY MCBEE CO.

Creation of two new executive positions has been announced by H. C. Davis, vice president in charge of sales of the McBee Company. J. D. Petry has been made Customer Relations Manager and R. B. Finley Product Application Manager. The two posts were established to better organize service to the expanding McBee sales force.

Petry who had been assistant manager of the New York City office will have among his varied duties responsibility for national shows, exhibits, meetings and lectures. Mr. Petry will also supervise the handling of all customer inquiries.

Finley, a certified accountant, previously was attached to the New York office, assisting in the technical application of McBee products. Before joining McBee he had been associated with Air Reduction Co. and Haskins and Sells. He will be responsible for determining the application of McBee products in selected markets and will supervise the design of forms and procedures.

Both new executives will be attached to the company's general sales headquarters in New York City.

1 1 1
NEW BOOKLET ON TAB FILING EQUIPMENT

How to boost tabulating card production through the use of specially designed card filing accessories is the subject of a new booklet (LB 442) published by Remington Rand Inc.

Outlining the advantages of its new Aristocrat Punched-Card Files with their unique pressure follower feature, the illustrated booklet shows how greater card capacity, greater card mobility, increased ease of reference and improved drawer operation of the new unit combine to provide faster, more efficient handling and longer life for vital tabulating cards.

In addition to the precision-built files for housing active tabulating cards, the booklet also describes and illustrates the functions of another model specially designed for semi-active cards, a tub desk for cards having heavy reference use, and transfer cases which provide sturdy permanent housing for inactive cards.

Copies of this booklet may be obtained by writing to F. J. Hastings, Remington Rand, Inc., 315 Fourth Avenue, New York 10, N. Y.

1 1 1
KEY DRIVEN CALCULATOR



The accompanying illustration is of the Addicalco calculator distributed by the Rapid Computing Company, 135 Liberty St., New York, N. Y., which can add, multiply, divide, subtract and accumulate and obtain net amounts from chain discounts, reciprocals, conversions and percentages. The machine is made by the A. C. C. A. company, Milan, Italy.

A. B. DICK COMPANY BUYS LITHOMAT DUPLICATING BUSINESS

The A. B. Dick Company, 5700 Touhy Avenue, Chicago, Ill., recently bought the office offset duplicating business of the Lithomat Corporation of Cambridge, Mass., as the first step in its plans for entering the offset duplicating market with a full line of machines and supplies. The Lithomat offset supplies, will now be marketed through the distributors for A. B. Dick mimeograph products. In the near future, these products will be packaged under the Dick label and known as the A. B. Dick Mimeolith supplies for offset duplicators.

INTRODUCE NEW ROYAL CONTINUOUS-FORM TYPEWRITER



The Royal Continuous-Form Typewriter, the result of years of research and development, is now available for office use, according to the Royal Typewriter Company, 2 Park Ave., New York, N. Y.

This typewriter features the use of carbon ribbons which feed automatically between the forms; it thereby eliminates handling of separate forms and sheets of carbon. It has a wide variety of uses such as preparation of requisitions and orders, and is particularly adaptable in the writing of invoices, statements and other business forms. All of these are produced with greater economy in time and materials.

Forms consisting of an original and as many as seven duplicates can be typed as easily and quickly as an original and one duplicate. A ribbon-well which is attached to the back of the typewriter accommodates from one to eight carbon ribbon spools, any or all of which may be used for typing a particular form. Because every inch of carbon ribbon is used before discarding, there is no waste as in the discarding of partially unused sheets of carbon.

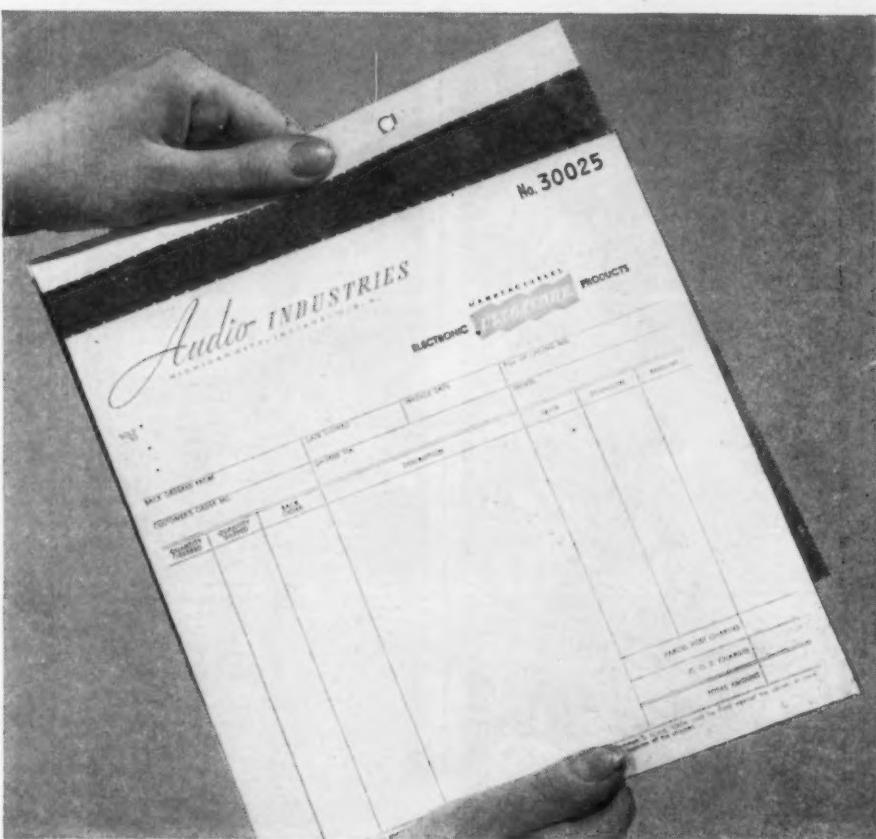
Keyboard and carriage controls are identical with those of the standard Gray Magic Royal Typewriter, with the addition of a convenient palm tabulator to further speed the work. Key-Set tabulation and uniform scales also add particular accuracy and ease in the typing of business forms.

The new Continuous-Form Typewriter is said to obsolete the use of full or half-sheets of carbon in typing continuous business forms.

(Please turn to page 176)

what could be simpler than

UARCO E-Z-OUT FORMS



in unit sets...



- For handwritten or typewritten records
- One quick motion separates carbons and forms
- May be held intact for later entries
- Single copies may be removed
- All styles, standardized and custom

or continuous unit sets



- For machine written records
- All E-Z-Out advantages—in linked sets
- Forms feed themselves . . . typist only types
- No realigning, no carbon fuss
- Sets linked in packs of 500 or more

For a free demonstration, call your Uarco Representative. For free samples, send coupon below.



Factories: Deep River, Connecticut;
Chicago, Illinois; Cleveland, Ohio;
Oakland, California.
Sales Representatives in all principal cities.

UARCO Incorporated
141 West Jackson Boulevard
Chicago 4, Illinois

Please send me samples of E-Z-Out unit set forms
 continuous unit set forms

Name.....

Address.....

City..... State.....



A Touch Of The Season . . .

To the perfectly appointed CRESTLINE Office let us add a touch of the season that is ahead. And if you are still in the considering stage, what better time than now to give yourself and your staff a CRESTLINE Office by Security. It is a gift that will live, and one you will be happy to live with in the many years ahead.



MSF-60 CRESTLINE Flat Top Desk

SECURITY STEEL EQUIPMENT CORP., AVENEL, N. J.

Crest LINE



EXECUTIVE CHANGES AT GENERAL FIREPROOFING

D. K. Phillips has been named secretary and treasurer of the General Fireproofing Company, Youngstown, Ohio, succeeding William D. Skinner, retired; and Melvin F. Ogram has been elected assistant secretary and assistant treas-



D. K. Phillips



M. F. Ogram

urer. Mr. Phillips formerly was comptroller and assistant secretary, joining the company as comptroller in 1943. Mr. Ogram has been with the company since 1937, except for a four-year stretch in the army during World War II.

* * *

BOOKLET ON OFF-SET PRINTING

A booklet entitled "Past, Present and Future of Offset", written in layman's language, is available from the Sales Promotion Department, Electric Boat Co., Printing Machinery Division, 445 Park Avenue, New York, N. Y. The booklet includes a comprehensive discussion of all printing techniques as well as the complete background and development of "Offset" including sections devoted to metal plates, rubber blankets, water systems and other technical aspects of lithography.

* * *

ELECTRIC PENCIL SHARPENER SAVES TIME AND PENCILS

The accompanying illustration shows electrically operated pencil sharpener displayed by the Bert M. Morris Co., 8651 West Third Street, Los Angeles,



This electric sharpener shuts off automatically when pencil is sharpened

Calif., at the NIGP fifth annual convention and products exhibit in Milwaukee. It is a definite time saver and pencil saver being especially practical from the latter standpoint where colored lead pen-

cils are used. It does its job automatically. Upon insertion of a pencil in the device, an electric switch is operated setting the sharpener in action. When the pencil is sharpened, the machine automatically shuts off. It gives a choice of three points—medium, fine or extra fine.

**UNDER-COUNTER UNITS FOR
OVER-COUNTER DEALING
WITH PUBLIC**



New Under-Counter units based upon studies of the functional requirements for over-the-counter dealing with the public, developed by the Herring-Hall-Marvin Safe Co., Hamilton, Ohio, are of interest to utility and other large companies having such public contact. All requirements for paying and receiving money, taking applications, adjusting claims, etc. have been translated into standard units. The units can be arranged economically to suit counter-plans, volume, activity and procedures, and to place cash, records and counter-machines at employees' finger tips for prompt, competent service. The line includes a counter cash guard which makes it easy to operate with a minimum amount of cash exposed. The equipment is built of furniture stock steel finished in smooth gray. Either swinging or sliding doors are used for storage areas. Counter tops are linoleum covered, bound with stainless steel. Printed matter is available.

**NEW EDGER FOR APPLYING
PROTECTIVE EDGES TO SHEET
MATERIAL**

A new, improved "Scotch" edger for applying protective edges to blueprints, posters, maps, drawings, and other items has been introduced by Minnesota Mining and Manufacturing Co., St. Paul, Minn. The edger can also be used to apply tape for reinforcing the fold in sheet material, music and records, and to bind single pages together in the form of a folder.

Either $\frac{1}{2}$ -inch or $\frac{3}{8}$ -inch wide tape can be used in the new edger. Earlier models required separate machines to handle the various tape widths.

Other features include lighter weight, sturdier construction of sand-cast aluminum, permanently lubricated bearings, and automatic self-adjustment for different thicknesses of paper up to $1/16$ -inch. White "Scotch" edging tape No. 750, (Please turn to page 178)



Everything "Under One Hat"...



ALL INDIVIDUAL RECORDS:

Ledger Accounts

Employee Records

Sales Records

Stock Records

**Credit or
Collection Records**

**Cost or Production
Records . . . etc.**

...with Boorum & Pease Visible Records

**Free Folder tells how
this portable, multiple
unit keeps as many
as 6,000 individual
records "under one
hat"—instantly
visible for reference
or posting. Get all
the facts without
obligation. Clip and
mail the coupon today.**

BOORUM & PEASE COMPANY, Dept. P
84 Hudson Avenue, Brooklyn 1, N. Y.

Please send me, without obligation, free booklet giving
all the facts about B & P Visible Records.

NAME _____
COMPANY _____
ADDRESS _____
TITLE _____

(Continued from page 177)

designed with a special adhesive to prevent oozing at the edges of the tape, permits taped sheets to be filed without sticking together.



Distribution of the edger and tape is through blueprint houses, drafting supply firms, art and music supply stores, and stationers.

RECORD SORT SYSTEM FOR SMALL BUSINESS

A modified use of punched cards which makes the basic features of mechanical recording available for small business has been devised by Remington Rand, Inc., 315 Fourth Ave., New York, N. Y., through development of a Record Sort system.

The new Record Sort can be used for all kinds of record keeping and statistical work, and the punched cards can be automatically sorted at high speed and utilized

ized for manual addition on a standard adding machine, or processed on centralized punched-card accounting equipment. The system can be used to set up simplified records from which information can be summarized in manual or mechanical reports.

Composed of three basic units, the system includes a card punch machine, sorting machine and an adding machine. Record keeping procedures are reduced to five steps. Heart of the system is the sorting machine through which cards are grouped in the required sequences and, if desired, simultaneously counted at the rate of 25,200 sorts an hour. The system simplifies record filing problems, insures unlimited record-keeping expansion, steps up accuracy, and cuts clerical costs.

1 1 1

FINGER-LIFT POSTURE CHAIRS

A new line of posture chairs featuring instantly adjustable "Finger-Lift" seats, for office and industrial use, has been developed by the Hamilton Manufacturing Corporation, Columbus, Indiana. Designated as Cosco "Finger-Lift" posture chairs, both seat and posture back can be instantly adjusted without tools or turning the chair over. The seat can be raised to any height between 17" and 20" by lifting lightly on the seat. It can be lowered and locked securely at any height in the same range by pressing a control lever beneath the seat. The backrest is adjustable in three ways—up and

down for height; in and out for depth of seat; and tilts to follow movement of user's back. The chair is available in three models. It is of tubular steel con-



struction in extra heavy chromium, or baked in gray enamel. Legs are fitted with free-rolling, rubber casters, operating on life-time lubricated ball bearing swivels.

1 1 1

OFFICE OF THE YEAR SELECTED IN SURVEY

A nationwide survey to select the Office of the Year was recently made among a group of experts in the fields of office design and efficiency. Those polled included members of the American Institute of Architects concerned with office design, and members of the Association of Consulting Management noted for their work in office efficiency.



In Erasing, Too, MAGIC IS AS MAGIC DOES

There's no rabbit trick—no magic—when it comes to finding the best way to save time and tempers when mistakes are made in handwriting, typing and business machine impressions.

Superb quality Weldon Roberts Erasers, efficiently sized and shaped for neatest, fastest work save the entire re-writing of letters and records that could be spoiled by "messy" erasing.

There are many styles in time-saving Weldon Roberts Erasers especially suited to your requirements. Ask your dealer for recommendations or write us.

WELDON ROBERTS RUBBER CO., NEWARK 7, N. J.
World's Eraser Specialists

121 ELLIPTIC Soft gray eraser in handy elliptical shape for pencil or ink erasures on all types of work.



Weldon Roberts Erasers
Correct Mistakes in Any Language

The RIGHT pencil for the RIGHT job

KOH-I-NOOR PRODUCTS

62 Years Ago KOH-I-NOOR

made the FIRST Drawing Pencil . . . in 17 DEGREES, 6B to 9H. Since that time no other pencils have approached Koh-I-Noor's Record for Unfailing Uniform Performance.

No Matter What Your Requirements . . .
you will find a KOH-I-NOOR
Product to satisfy you completely

NOW Available

#1600 KOH-I-NOOR
Polycolor Pencils
with IMPORTED Leads

in 67 colors

DRAWING PENCILS
COPYING PENCILS
WRITING PENCILS
CHECKING PENCILS
COLORED PENCILS
OFFICE PENCILS
ART PENCILS
HOLDERS and LEADS
PENHOLDERS and ERASERS



KOH-I-NOOR PENCIL COMPANY, INC., BLOOMSBURY, NEW JERSEY

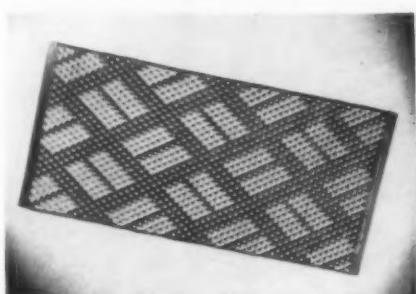
As a result of the survey the Philip Morris Company was awarded a plaque as first prize for offices having 500 or less employees. Much of the equipment used in the prize-winning office was supplied by the Shaw-Walker Co., Muskegon, Mich. President O. P. McComas of the Philip Morris Co., emphasized



Attractiveness and efficiency feature office of Philip Morris Company adjacent to reception room

that in selecting equipment for the new offices, they strove to create an atmosphere of warm welcome for customers and a pleasant place in which to work.

1 1 1
**RUBBER LINK MAT FOR ENTRANCES,
LOBBIES, CORRIDORS**



A new colored rubber link mat, designed for entrances, lobbies and corridors has been put on the market by the American Mat Corporation, 1710 Adams St., Toledo, Ohio. The new mat, known as the Ezy-Tred, differs from other rubber link mats in respect to link size, the links being $\frac{3}{4}$ " wide and $1\frac{3}{8}$ " long. The links are woven on a frame work of rust-resisting galvanized spring steel wire to length. Corrugations in the links, which act as a scraping surface, remove dirt from foot traffic, holding it between the links. The mat may be rolled up for floor mopping. The mats are custom made in any desired design or pattern.

1 1 1
**FOLDER DESCRIBES
FAST FILING SYSTEM**

Advantages of its Triple Check Automatic filing system for files of ten drawers or more are set forth in new folder available from any Remington Rand branch or from Remington Rand Inc., 315 Fourth Avenue, New York 10, N. Y.

File by letter, control by number, check by color, are the basic elements of Triple Check. Features of the system are simplicity and speed of operation.

(Please turn to page 180)

Prominent Users of Strathmore Letterhead Papers: No. 91 of a Series



The main office of the Philadelphia Saving Fund Society in its 36-story building at Twelfth and Market Streets; seven branches are at other locations in the city.



**QUALITY... *the foundation
of a sound business reputation***

Of all the details, large and small, upon which a company finds its reputation, nothing establishes a more immediate, a more vivid impression than the letterhead on which it addresses its customers and prospects. It is because of this that leading companies specify Strathmore for their letterheads.

The Philadelphia Saving Fund Society is one of these leaders. America's first and oldest savings bank, it was established in Philadelphia in 1816, and stands today as the largest mutual savings bank in number of depositors and the second largest in total deposits. Such organizations know that they must convey quality and integrity in everything they do, so naturally they select Strathmore papers to represent them to the public.

Look at your firm's letterhead: Does it present a picture of your company that establishes a *quality* reputation...that by its very look and feel attract attention to your message? Appraise the design—is it modern, fresh-looking? Should it be re-styled to convey the picture of your present-day outlook? Consult your supplier today. Have him submit samples of your letterhead on Strathmore. See for yourself what a quality paper can do to express quality for your firm.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond, Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.

STRATHMORE **MAKERS
OF FINE
PAPERS**

Strathmore Paper Company, West Springfield, Massachusetts

MECHANIZATION OF ACCOUNTING SPEEDS UP WORK

The Supply Division, Air Materiel Command, USAF, Wright-Patterson Air Force Base, Dayton, Ohio, has streamlined a large portion of its paper work at all United States depots to keep pace with the rapid technical growth and striking power of the Air Force. At least 20 days have been clipped off the average time required for preparation of world-wide stock balance and consumption reports through the installation of modern, high-speed accounting machines.

In effect, depots are "wholesalers and retailers." They operate a world-wide "mail order" business, receiving, storing, and issuing an estimated 30,000,000 items annually for the Air Force. The items range from nails, nuts, and bolts, to complete aircraft engines, vehicles, and rescue boats, and require numerous reports to keep tab of them. There are 13 active depots in the United States—the bulk of their business being "wholesale."

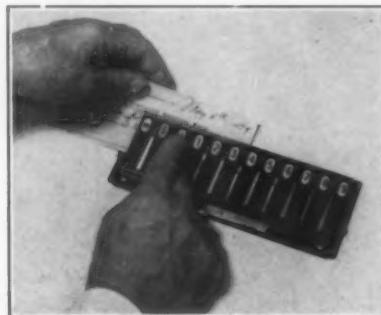
Announcing that all property accounting records at the depots have been mechanized, Brigadier General James F. Early, Chief of the Supply Division, AMC, said that the move was necessary to speed-up work and effect economy in operation. He added that the benefits derived from mechanization are two-fold:

1. It relieves stock control clerks of the responsibility of manually maintaining voluminous records. It permits them

to apply 50% more of their time than previously to the important phases of stock control, such as the determination of stock levels, redistribution of stocks, and initiation of requisitions. Previously, arithmetic alone under manual operation consumed one-half of their time.

2. It provides a system which insures accurate accountable records and timely reports to Headquarters, AMC, Dayton, Ohio, on activity and status of stock. These reports are used as a basis for procurement and disposition.

SMALL CHECK-WRITER



Small check-writer known as The Executive Checkwriter is being marketed by the Marcy F. Roderick Co., 3312 Lancaster Ave., Philadelphia, Pa. It is claimed to assure standard protection against the possibility of check alteration, and may be used on all standard

sized checks. Large, legible figures are indelibly perforated and inked into the fibres of the check in a matter of seconds. The unit is made of steel and enclosed in wallet type case. It is seven inches long, three inches wide, one inch deep and weighs six ounces.

COMBINED UTILITY TABLE AND AIR CIRCULATOR



The Aire-Table, double duty square table, designed to serve as a small but useful utility table equipped with rubber-blade fan in lower section, is announced by Maso Steel Products, 81 W. Van Buren St., Chicago, Ill. Lower shelf is available for use when fan is not operating. The table is 16" square, 18" high, equipped with a 12" two-speed fan, 110-120 volts, a-c only.

*Get your message
to your man*
RISING IS RIGHT!

Unless your direct mail gets notice—it gets nothing. So let Rising Intralace demand attention, with its bright white—clean crisp look—and quality feel. Broadsheet or brochure, teaser or stuffer...all work harder when you combine a good print job with Rising Intralace. Let your printer show you—he knows!

Rising Intralace

- ✓ Distinctive pattern appearance
- ✓ New brilliant white ✓ Inexpensive
- ✓ 5 weights ✓ Envelopes to match in 5 sizes
- ✓ Specially sized for offset and gravure
- ✓ Excellent printing surface for letterpress



WHEN YOU WANT TO KNOW... GO TO AN EXPERT!

Rising Papers

ASK YOUR PRINTER... HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.



Because
MONGOL
stays sharper
longer



Ed, the Office Manager,
sees stepped-up work
efficiency... fewer min-
utes wasted at the sharp-
ener... fewer work-
interruptions. And the
Boss sees over-all economy
in pencils GUARANTEED
not to break in normal
use. Write for FREE
pamphlet "How
to Relate Pencils
to Results."

TRADE MARKS
REG. U. S.
PAT. OFF.

EBERHARD FABER

37 Greenpoint Avenue, Brooklyn 22, N. Y.



1. Carpet Sweeper—Bissell
 2. Vacuum Cleaner—Eureka
 3. Vacuum Cleaner—Electrolux
 4. Kitchen Tools—Ekco Products
 5. Portable Typewriter—Underwood
 6. Toaster—Proctor
 7. Radio—RCA Victor
 8. Can Opener—Dazey
 9. License Frames—Cello Products
 10. Corn Popper—Knapp Monarch
 11. Waffle Iron—Knapp Monarch
 12. Lighter—American Safety Razor
 13. Gem Razor—American Safety Razor
 14. Cap Pistol—All Metal Products
 15. Tru-Heat Iron—General Mills
 16. Flashlight—Ekco Products
 17. Hopalong Cassidy Skates—Rollfast
 18. Ice Crusher—Dazey

Gleaming gifts for a Christmas bright with precision plating by Udylite

The attractive appearance of the gifts is due in no small part to their gleaming metal finish—imparted by Udylite equipment and processes. For manufacturers have recognized that Udylite can show them effective, economical methods of giving their products the kind of finish that

brings out the inherent beauty of metals—and gives lasting protection. Call a Udylite Technical Man into your plant to show you the Udylite method of achieving lasting lustre and protective coating at lower cost. Or write direct to The Udylite Corporation, Detroit 11, Michigan.

PIONEER OF A BETTER WAY IN PLATING . . .

TESTED SOLUTIONS • TAILORED EQUIPMENT
AUTOMATIC CONTROL IN METAL FINISHING



AMONG THE Associations



Sixth District Fourth Annual Conference Held in Columbus

More than 200 purchasing agents registered for the Fourth Annual Conference of the Sixth District of the National Association of Purchasing Agents, which was held in the Deshler-Wallick Hotel, Columbus, Ohio, October 27 and 28. The Conference District includes the following associations: Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Erie (Pa.), Northwestern Penna., Pittsburgh (Pa.), Springfield,



"We must investigate price increases," declared President H. F. Jones of N.A.P.A.

Toledo, Youngstown, Tri-State (W. Va., Ky., Ohio), and Newcastle Pa.

Following call to order Friday morning, October 27, Mayor James A. Rhodes of Columbus, and President W. R. Henry of the Columbus Association, extended greetings to the delegates. The first speaker on the Friday morning program was Bruce D. Henderson, assistant to vice president, Westinghouse Electric Corp., Pittsburgh, Pa., and vice president of District No. 6. Mr. Henderson presented a paper on "How Big Should a Purchasing Department be?", which appears in this issue of PURCHASING Magazine.

In the discussion period following his talk, Mr. Henderson stressed that though the purchasing department is a very important department, too many purchasing agents have an inferiority complex so far as their respective departments are concerned. In response to a query as to whether there was any way to measure the value of plant visitations

he said, "If you are going to do a good negotiation job you have to know enough about production processes and trade practices and the selling policies of the people you deal with to be able to negotiate effectively."

Replying to another question as to the status of the purchasing department, he said "The Purchasing department never can be the kind of a department it should be until the purchasing agent has sufficient ability to be one of the top men on the management staff. If he has that ability, he will have influence far beyond his authority. That is what we have accomplished in many of our Westinghouse plants."

Commenting on the statement of another delegate that his department had saved some \$9,000 on one job through standardization, Mr. Henderson said that standardization should be near and dear to the hearts of all men in purchasing, and informed his audience that one of the new National Association committees will be a standardization committee. "I am convinced", he said, "that standardization is a channel through which purchasing agents can increase their contributions to company profit."

The next speaker was S. J. Rosch, research development engineer, Ana-

conda Wire & Cable Co., who interpreted the functions of the catalyst in chemical constructions, in layman's language in a talk on "Adventures in Science." In his preliminary remarks he said that the



Mrs. W. R. Henry and President W. R. Henry of the Columbus Association

"future purchasing agent will have to know a lot more than he did before" and that the requirements of sound procurement will within the next ten years, materially change the type of knowledge required in the purchasing department. "If you can put on technical men", he said, "do it, it will pay dividends." He emphasized the importance of keeping abreast of technological developments saying that the things you know about

(Please turn to page 184)



Conference workers of the Columbus Association were on the job from the first registration to Ohio-Iowa football time

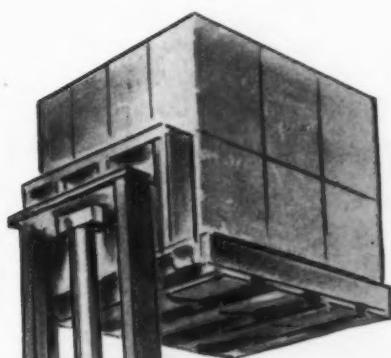
Trucks powered with Gould "Thirty" batteries go at full power months after ordinary batteries have begun to slow down.

96% of the entire working surface of Gould's new "Z" Plate is regenerative power-producing material. The grid itself is 66% more resistant to deterioration. Grid porosity is reduced 85%. This is why the

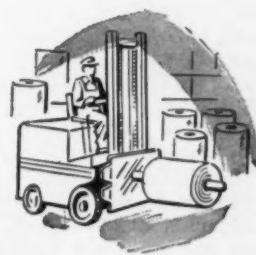
GOULD "THIRTY" BATTERY
with new "Z" Plates is
"America's Finest Industrial
Truck Battery"



Position loads faster.
Lift and maneuver
at same time. Stable
on highest lifts.

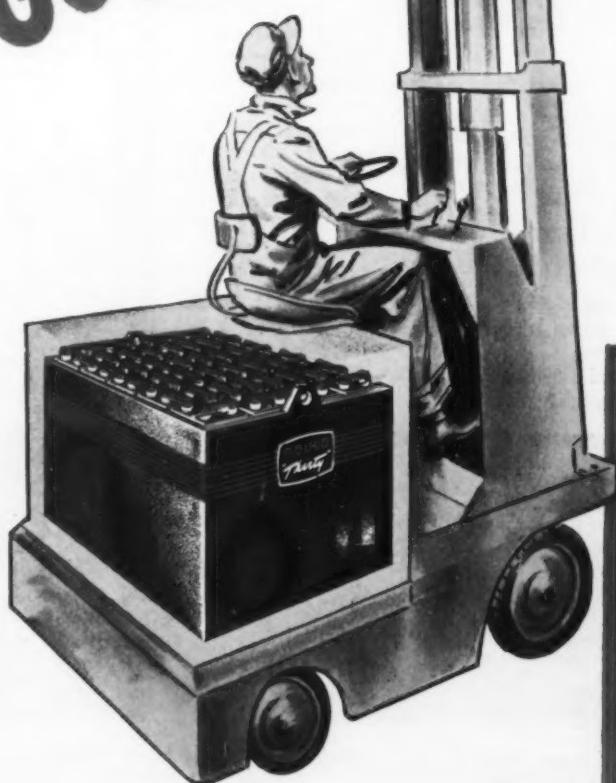


Battery trucks do
more work. Always
ready to go.
No unpredictable
down-time. Foolproof
speed controls.



**Nothing
Beats**

GOULD-POWERED TRUCKS!



Battery trucks are smooth,
easy to handle,
cut driver fatigue.
quiet, odorless, safe.

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC.*

TRENTON 7, NEW JERSEY

Always Use Gould-National Automobile and Truck Batteries

*Formerly Gould Storage Battery Corporation



Cincinnatians at the Banquet



Akron was well represented



One of the Tri-State Groups

today may be obsolete tomorrow."

Friday afternoon was given over to commodity discussions on steel, lumber, paper, fuels, scrap and containers. Abstracts of talks by H. W. Ledebur, purchasing agent, Hammond Iron Works, Warren, Pa., on steel, Owen Willson of the Dougherty Lumber Company, Cleveland, on lumber, Ralph N. Betts, American Education Press, Columbus, on paper, and Wm. F. Jones, Gulf Oil Corp., Pittsburgh, on containers, will be found in the fore part of this issue of PURCHASING Magazine.

In addition, there was a talk by W. A. Welcker, Jr., Battelle Memorial Institute, Columbus, on Fuels—Coal, Gas, and Oil, and one by Edwin C. Barringer, executive vice president, Institute of Scrap Iron & Steel, Washington, D. C., on Scrap.

In the course of his talk on fuels, Mr. Welcker said that the impact of increased coal prices and occasional closing down of the mines had caused purchasing agents to look seriously at the merits of other fuels, and that many operations have been converted to other fuels. All characteristics of the type of fuel to be burned should be considered before installing new equipment and when old equipment is still in use, the type of coal best suited should be used. Mr. Welcker said that it is not always possible to be sure of a continued source of one type of coal, and for this reason the burning equipment should be selected to handle non-premium coal.

"In order for us, as purchasing agents, to buy coal intelligently, it is necessary to know as much about coal specifications as we do about steel, paint or any other commodity," he said. "One cannot look at the heat content or chemical analysis alone. We still have thousands of boilers that were poorly designed and must have a specific type of fuel to do the best job."

Speaking of oil, he said there seems to be no immediate crisis in the supply picture for petroleum, stating that consumers should give the oil industry a hand in increasing storage facilities. The oil industry will continue on a competitive basis, he said.

Characterizing natural gas as the most perfect fuel for many uses, Mr. Welcker said that the gas industry is



"The greatest source of our future materials will be gases." said Dr. S. J. Rosch

directing its investment policies on a basis of a 25-year continued production at the present rate from known reserves. Natural gas provides a high heat rate in a small space and since the storage and supply problem is not faced by the consumer it makes the most ideal fuel for small plants and for processes needing close control. The cost of natural gas has remained reasonably constant over the country, he stated, though this may change in the future to compensate for higher material and labor costs.

Executive Vice President Barringer

of the Institute of Scrap Iron and Steel, in the course of his paper on ferrous or iron and steel scrap said that 29 million tons of purchased scrap will be consumed this year. Steel mills making the ordinary or carbon grade of steel will use 25% purchased scrap, 25% home scrap, and 50% pig iron in their charge. However, to make high grade alloy or stainless steel, the charge usually is almost 100% scrap—the best grade. Most foundry practices involve the use of about one-third each of purchased scrap, home scrap and pig iron.

More than one-third of the 29 million tons will come from metalworking factories. The fabrication of most steel involves substantial loss, as high as 30% in many operations of the automobile industry, the average loss in converting steel being close to 15%, and in machining castings three to five percent. Other sources of scrap are the railroads, auto-wreckers, farms, housing repair and maintenance, government agencies, ship breaking, public utilities, oil fields and refineries, and collections by peddlers. Export trade is inconsequential and is overshadowed by imports.

"The economic importance of scrap can be gauged from the fact that every ton of scrap used is the metallic equivalent of one ton of pig iron, to produce which requires two tons of iron ore, one ton of coal, and $\frac{3}{4}$ ton of other raw materials. With high grade ore becoming scarcer and steel mills reaching overseas to open up ore bodies, the great economic value of using scrap instead of ore becomes readily apparent. The big question confronting the government in fostering expansion of the steel industry is, where will the metallics come from?"

The Friday sessions were followed by a cocktail hour, dinner and entertain-

(Please turn to page 188)



Toledo: Messrs. King, Bohn, Shontz (Findlay) and Lang



Cleveland: Messrs. Grant, Porter (president), Hudson and Carlson



Pittsburgh: Messrs. Jones, Wenz, Carlisle and Duncan

Eaton Permanent Mold Gray Iron Castings

for
REFRIGERATION
APPLICATIONS



- Free machinability
- Dense, non-porous structure
- Uniform structure throughout the casting
- Freedom from leakage under pressure
- Properly annealed; no growth or distortion after machining
- Machines to high, mirror-like finish

Send for your copy of the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers



William R. Murray



J. Joseph Fogarty



Herbert Layport

Purchasing Agents Of New England Hold Annual Conference in Providence, R. I.

The 1950 Annual Conference of the Purchasing Agents of New England sponsored by District 9, N.A.P.A., was held at the Sheraton-Biltmore Hotel, Providence, R. I., on October 27. Represented in the heavy attendance at the affair were the Connecticut, New England, Rhode Island, and Western Massachusetts associations.

The meeting was called to order at 9:30 a.m. by William H. Hunt, purchasing agent of Nicholson File Co., and general conference chairman. Following the invocation by Rev. Frank Crook of Rumford, R. I., J. Joseph Fogarty, State of Rhode Island, and president of the Rhode Island Purchasing Agents Association, greeted the visitors.

John R. Fuller, manager of purchasing of Lamp Division, Sylvania Electric Products, Inc., and National Director of the New England Purchasing Agents Association, the morning session chairman, introduced first William R. Murray, general purchasing agent of Bigelow-Sanford Carpet Company, and vice-president of N.A.P.A. for District 9. Mr. Murray read a telegram from N.A.P.A. president Harold F. Jones who was at the District 6 conference in Columbus O., expressing his regrets

at being unable to attend. Mr. Murray reported that the affairs of the district were in good order and noted with satisfaction the excellent attendance at the conference. He discussed the purpose of the local conferences, and outlined the democratic machinery of the national organization and its basic principle of "bottom-up government".

Charles M. Healey, Jr., purchasing agent of the City of Springfield, Mass., speaking on public relations in purchasing, pointed out that it is only "doing what comes naturally" — meeting people and making friends. He urged that purchasing men stay aware of the fact that the purchasing department is the "show window" of industry, where the visitor's most important impression of their companies is first received. He urged his listeners to enter into community life in their areas and described how he has made several public addresses before various organizations using as his subject the workings of his department. Mr. Healey said that the N.A.P.A. had a good fund of material on public relations that is available to all members. He said friendliness, fairness, courtesy and consideration are the foundation of good public relations, helping to earn a good reputation for the company.

Herbert Layport, manager of purchases for Wyman-Gordon Company, in an address entitled "Are We Prepared?" asked if purchasing men are ready to meet "today's problems with today's answers". He urged his listeners to build up priority sections in their departments if they had not already done so. Good people are getting hard to get, he warned, and now is the time to get a man and fit him into the department so that he will be ready when the situation really gets tight.

"Resistance Up, Prices Down"

Mr. Layport, using specific examples from his company's operations, declared that purchasing can keep costs down and

(Please turn to page 188)



Kendrick Burns



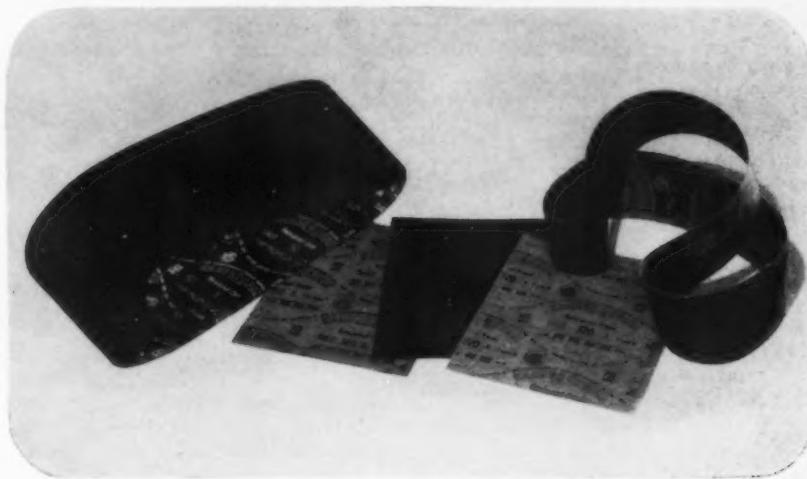
Eugene D. Emigh, Jr., John D. Fuller and William H. Hunt



Robert E. Shillady talks on fuels at commodity forum



COATED PRODUCTS COMMENTS



Back of Performance

In evaluating abrasive products the *back* of the belt or sheet is fully as important as the front.

When the back carries the CARBORUNDUM brand identification you can be sure of saving man hours, increasing production and producing a better-quality finish, through selection of the *right* abrasive product from the only *complete* abrasive line.

Waterproof Cloth Belts are fast-cutting and durable...reduce machine down-time. FLEXBAC

Waterproof Paper is lightweight yet sturdy, with high resistance to tearing and peeling. FASTCUT *Waterproof Paper* features a fast initial cut and high cutting rate throughout life of the sheet.

Your CARBORUNDUM representative will give you details about these and other quality products in the *complete* line of abrasives by CARBORUNDUM. Coated Products Division, The Carborundum Company, Niagara Falls, N. Y.

COATED ABRASIVES BY **CARBORUNDUM**

TRADE MARK

Making ALL abrasive products . . .
to give you the proper ONE

"Carborundum", "Fastcut" and "Flexbac" are trademarks which indicate manufacture
by The Carborundum Company



(Continued from page 186)

thereby do a "little holding of reins on inflation". "We may not check it completely" he said, "but we can guide it so that we don't end up in a ditch. We have to keep our resistance up, and prices down." He advised the purchasing men to keep careful watch that the control of the purchasing function is not taken from their hands by other departments. He called on purchasing men to cooperate not only with people in their own organizations in the exchange of knowledge and ideas to keep costs down, but with other members of the association. "We must all be 'educators'" he said.

A description of purchasing operations at Bigelow-Sanford Carpet Company was given by George J. Romieu, assistant general purchasing agent of the company. Mr. Romieu's talk appears elsewhere in this issue.

Chairman of the afternoon session was Eugene D. Emigh, Jr., purchasing agent of the United Illuminating Company, and president of the Purchasing Agents Association of Connecticut. Mr. Emigh introduced first E. B. Gallaher, general distributor, Clover Manufacturing Company. Mr. Gallaher's remarks are printed in another section of this issue.

Everett Merrill, Merrill & Usher, Inc., discussed the steel situation and de-



A. Alexander Robey, P.A., Ames Textile Corporation

clared that nobody had to defend the steel industry, that it had kept up with the times by expanding production constantly. He declared that although trying to guess what portion of steel production is going into defense is like trying to guess the stock market the purchasing agents were "going to get a break". The biggest problem he said would be to distribute the steel in an orderly manner.

Willis S. MacLeod, director, standards Division, Federal Supply Service, General Services Administration spoke on "Standard in Industrial Supply". His

talk appears elsewhere in this issue.

A commodity forum, under the chairmanship of Prof. Edward Bursk, editor of the Harvard Business Review, closed the meeting. Participating were: A. F. Sheldon, vice-president and general manager, Kennecott Wire and Cable Company, on non-ferrous metals; Kendrick Burns, purchasing agent of S. D. Warren Company, on lumber; A. Alexander Robey, purchasing agent of Ames Textile Corp., on textiles; Robert E. Shillady, vice-president of New England Power Service Company, on fuels.

George A. Renard, executive secretary-treasurer of N.A.P.A., appeared informally during the commodity forum, and gave a brief and incisive review of the situation on government regulations.

The conference closed with a banquet on Friday evening. William H. Hunt was toastmaster. Guest speaker was Dr. Murray Banks, psychologist-humorist.

The General Conference Committee consisted of Mr. Hunt; William R. Murray; Raymond Bingham, International Silver Company; John B. Donovan, Valentine Concrete Company; F. C. P. Drummond, Lonsdale Company; John R. Fuller, Sylvania Electric Products; Harry J. Graham, secretary of New England Purchasing Agents Association, and Arnot Hirst, treasurer of Rhode Island Purchasing Agents Association.

Fourth Annual Sixth District Conference Held in Columbus

(Continued from page 184)

sewing and stitching of books.

President Harold F. Jones of the National Association of Purchasing Agents was the next speaker, his subject being "Fly Wheels or Fifth Wheels."

purchasing agents must not overlook any opportunity to create an atmosphere of competition, saying "Good business men are not afraid of being thrown into competition. Sales executives prefer competition. Competition is the backbone of our American system. It keeps prices in line. Sound purchasing policies are always in order."

Investigate Price Increases

"We must investigate price increases. Some business men use every opportunity to increase prices. Let's make sure that they are warranted. We should watch the housewife and be guided by some of the things she does. She thoroughly analyzes every purchase, and if it is priced too high she begins to look for a substitute."

"We as purchasing agents, who spend upwards of fifty billions of dollars annually, can do a job for American Industry and a patriotic job for America if we make sure that price increases are dictated by economic necessity."

"I feel that purchasing agents have taken on important responsibilities and we must accept these responsibilities if we expect to maintain the status we have attained. The fly-wheel stores up energy. Its momentum creates sound operation. The fifth wheel is a substitute or a superfluous thing. We can be fly-wheels. We can foster competition. We can investigate price increases. We can explain our business system to people who are uninformed. We should be fly-wheels rather than fifth-wheels."



W. L. Betz of Buckeye Steel Castings Co. and Mrs. Betz at dinner meeting

He was followed by Howard Chase, consultant, National Production Authority, Department of Commerce, Washington, who discussed current NPA activities.

Mr. Jones stressed the importance of good public relations, stating that purchasing agents have a definite job to do in the public relations field, as purchasing agents and as members of the business community. He also said that

ment, with Sixth District Vice President Bruce Henderson as chairman.

First speaker at the Saturday morning session was J. Homer Winkler, Battelle Memorial Institute, who presented a paper on "New Concepts of Printing Production." Mr. Winkler stated that printing production costs have continued to increase for the past ten years, and research is being directed to develop improvements in efficiency, new materials, faster operating procedures, new techniques, and speedier and less expensive machines. He reviewed various new developments in the graphic arts, and in the course of his talk stated that the plastic electrotype molding developed by Battelle Memorial Institute is the most significant development in the electrotyping industry. Plastic plates are being used in greater quantities for newspaper ad plates and have a decided advantage in shipping because of their light weight.

Magnesium is being used to an increasing extent as a photoengraving metal instead of zinc. Mr. Winkler said it will yield longer press runs and is excellent for use as a pattern for mats or duplicate plates. Printing inks are being made from new pigments and further reduction of drying time in certain of the inks has been achieved. Also, the introduction of hot-melt adhesives to book manufacturing, a Battelle development, has made possible a saving in production time and a nearly continuous production of books. The notched-binding process developed by World Publishing Co., Cleveland, eliminates

6 ADVANTAGES FOR YOU!

...in this New Low-Cost

Electric Transmission

by RELIANCE®

STARTS without clutches!

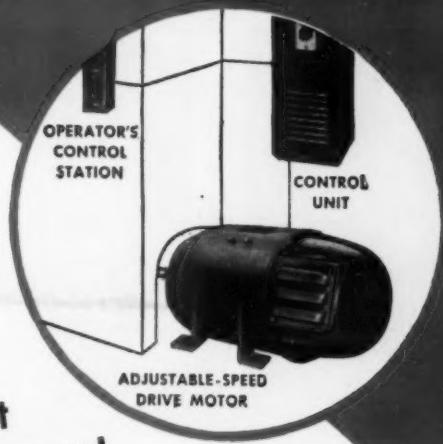
STOPS without mechanical
brakes or clutches!

REVERSES without use of gears
or clutches!

SPEED ADJUSTMENTS without
mechanical transmissions or change of gears!

JOGGING, INCHING, CREEPING without slipping clutches!

LOW COST—a price you can afford!



Now—for the first time—greater flexibility with faster and easier control, can be yours in an *All-electric* Adjustable-speed Drive comparable in cost to a mechanical transmission! The new low-cost Reliance V*S Drive, in sizes from 3/4 to 2 hp., performs all the functions of mechanical transmissions—*electrically!* Simple, safe and economical in its operation from A-c. circuits . . . here is the ideal drive for printing presses, paper winders and slitters, packaging machines, industrial food mixers, machine tools, conveyors and many other types of equipment. It will pay you to have further information. Write today for Bulletin D-2101. Ask also for Bulletin 311 for information on larger packaged V*S Drives through 200 horsepower.

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

"Motor-Drive is More Than Power" • 1056 Ivanhoe Road, Cleveland 10, Ohio

Chattanooga Scene of Successful 7th Annual Conference of Purchasing Agents of Southeast

The seventh annual conference, Purchasing Agents of the Southeast, sponsored by the nine member Associations of District 7, N.A.P.A., was held at the Read House, Chattanooga, October 16 and 17. Registered attendance was well over 200. Theme of the conference was "Better Procurement for Southern Progress".

Conference Chairman R. B. Bayston called the meeting to order on Monday morning, introducing George L. Wilson of Birmingham as presiding officer for the opening session. The meeting opened

Dean Walter J. Matherly of the College of Business Administration, University of Florida, spoke on "The Changing Economy of the South". He declared, "We are what we are chiefly because of where we are," citing the advantages of the region for a prosperous and diversified economy in the way of good soil and climate, natural resources, and an abundance of hydro-electric power. The immediate goal, he stated, is to raise the per capita income in the Southern states, and to this end he proposed a six-point program: develop new indus-



Left to right: Henry L. White, president of Chattanooga Association; W. W. Igou; R. B. Bayston; Thomas D. Jolly; W. S. Flinn; and Stuart F. Heinritz.

with a report on business conditions in the Southeast, presented by a panel including Clyde H. Porter of Birmingham, Charles E. Colvin, Jr., of Baton Rouge, Martin Sunderland of Memphis, Charles W. Hayes of Atlanta, and Hoyt B. Pritchett of Louisville. The business index for this area was reported as showing a 20% advance for the year, a record of sound progress that cannot be attributed to a war boom; gratification over this condition is somewhat tempered by a decline in farm income.

tries to absorb the surplus manpower released by the mechanization of agriculture; equalize trade differences with other areas; exploit natural resources; extend health and education facilities; work for better labor-management relations; and eradicate regional conflicts that the South may be free to achieve its own destiny within the Union.

E. E. McCullley, Chairman of the Seventh District Activities Committee, reported on Association work within the
(Please turn to page 192)

HAROLD K. HOWE SPEAKS AT ST. LOUIS ASSN. MEETING

A regular meeting of the Purchasing Agents Association of St. Louis was held on November 28 at the Sheraton Hotel. Guest speaker was Harold K. Howe, who is associated with the La Salle Steel Company as its Washington representative. Mr. Howe is editor of the news bulletin "Through A Washington Window".

Preceding the dinner an educational movie was shown.

1 1 1

BORG-WARNER PRESIDENT GUEST AT CHICAGO MEETING

A regular monthly meeting of the Purchasing Agents Association of Chicago was held on Thursday evening November 9 in the Hotel Sherman.

Guest speaker was Roy C. Ingersoll, president of Borg-Warner Corp., long prominent in the national and state business scene. Mr. Ingersoll's topic was "As a Business Man Looks at the State of the Nation."

1 1 1

NEW GOVERNMENT REGULATIONS SEATTLE MEETING

"New Government Regulations—How Will You be Affected?" was the interesting topic discussed at the first forum discussion meeting of the year, Purchasing Agents Association of Washington, Seattle, Wash., at the Central Y.M.C.A., October 26. Moderator of the discussion was Prof. Al Schreiber, University of Washington, College of Business Administration, with William Flood, business economist for Seattle Regional Office of U. S. Department of commerce, and A. B. Merritt, head of Discount & Credit Department of Seattle Branch for Federal Reserve Board.

On the same date, the members had the pleasure of a personally conducted tour of the College of Engineering at the University of Washington, following luncheon at the Student Union Building. This affair was arranged by the association's Noon Luncheon & Plant Visit Committee of which M. C. Michener is chairman.



Seventh District Council: seated left to right, secretary; Ollie L. Williamson, Jacksonville; C. E. Schardein, Louisville; W. W. Igou, Chattanooga; standing, A. G. Bartusch, Memphis; George H. Cole, Alabama; Newman M. Yeilding, Alabama; L. E. Ashley, Florida; W. S. Willis, East Tennessee; Charles W. Hayes, Georgia; G. W. Leep, Mississippi; George R. Bosworth, New Orleans; Harlan E. Cross, Alabama; E. E. McCullley, Louisville; Thomas W. Born, New Orleans.



The complete N-B-M BABBITT line . . . with each babbitt alloyed for specific service . . . gives you lower cost bearing life.

So-called "all-purpose" babbitts may be costing you money. A recent survey of a plant made by one of our engineers proved that a *saving of one-third on babbitt costs* could be made by using two grades of babbitt. Instead of using a high-tin babbitt exclusively in this plant, it was found that a very large percentage of the applications required only a low-cost lead-base babbitt.

Whatever your problem in babbitt metal may be, you'll find your answer in the complete line of National Bearing Division. Service recommendations are based on years of successful applications and experiences in solving babbitt problems. Write today for the facts on this complete line of Babbitt Metal!

This free book shows you how to get longer bearing service . . .

Contains valuable and complete data: how to specify, melt and pour Babbitt . . . how to prepare shells for stronger bonds. Use the handy coupon to order your free copy today.



AMERICAN
Brake Shoe
COMPANY

NATIONAL BEARING DIVISION

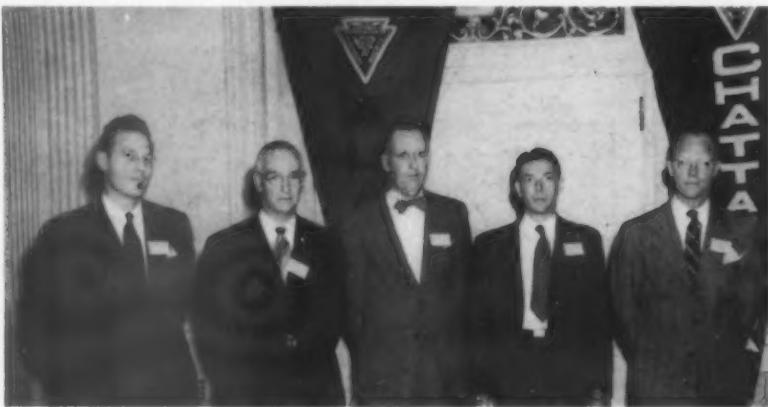
4940 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

(Continued from page 190)
District and plans for further projects.

Dan W. D'Alemberte of the Florida Association presided at the afternoon session. Speakers were T. D. Jolly, on "Saving with Standards", and Stuart F. Heinritz, on "Basic Principles of Pur-

Co., E. C. Wooten of Chattanooga Implement & Mfg. Co., A. H. Swindell of E. Idu Pont de Nemours & Co., Brownie Browne of Norge Div., Borg-Warner Corp., W. W. Igou of Harriman Mfg. Co., George Spurling of Spurling Printing & Office Supply Co., R. S. Henry of



Business Outlook panel, l. to r., Charles W. Hayes, Atlanta; Clyde H. Porter, Birmingham; Martin Sunderland, Memphis; Charles E. Colvin, Baton Rouge; Hoyt Pritchett, Louisville.

chasing". A panel headed by George H. Cole of Birmingham presented pertinent aspects of the N.A.P.A. Education Program. Members of the panel included T. A. Corcoran of Louisville, Harlan Cross of Birmingham, and T. W. Born of New Orleans. A feature of this presentation was a personal message to the Conference from George W. Aljian of San Francisco, National Education Chairman, given by wire recording and dramatized with a giant colored panel showing the puppet show from the National Convention, at which Mr. Aljian appeared in the role of an animated portrait.

Henry L. White, President of the Chattanooga Association, presided at the banquet on Monday evening, where the delegates and their ladies enjoyed a humorous address by James D. Arrington, Mayor of Collins, Mississippi.

Three officers of the National Association addressed the concluding session on Tuesday morning—O. L. Williamson of Jacksonville, Vice President for District 7; H. F. Jones, President; and George A. Renard, Executive Secretary. R. N. Patrick of Atlanta presided at this session.

Tuesday afternoon was devoted to a visit to the Dupont nylon plant and the annual golf tournament.

Entertainment for Ladies Successful

A delightful program of entertainment was provided for the ladies, including a boat trip on the Tennessee River and Chickamauga Lake, a tour of scenic Lookout Mountain and Rock City Gardens, with luncheon at the Fairyland Club, in addition to the cocktail hour and banquet.

R. B. Bayston of Chattanooga Boiler & Tank Co. was General Chairman of the Conference, and W. S. Flinn of Simplicity Systems Co was in charge of program arrangements. Other conference committees were headed by Tom Cubine of Provident Life & Accident Insurance

General Industries Co., C. L. Jack of O. B. Andrews Co., and Tom Brown of Converse Bridge & Steel Co.

The 1951 conference will be held at Memphis.

1 1 1

P. D. RESPONSIBILITY UNDER GOVERNMENT CONTRACTS

"Responsibility of Purchasing Departments working under Government Contracts and Defense Orders—DO" was the subject of panel discussion, at the November 15 meeting of the Purchasing Agents Association of Rochester, participated in by AN procurement men and others. Members of the Rochester Industrial Buyers Group were guests of the association for this meeting. Previous to the regular meeting, there was a meeting for members interested in "Steel" under the auspices of the association's educational committee.

1 1 1

EASTERN NEW YORK P.A.s HAVE TWO PLANT VISITATIONS

The October and November meetings of the Purchasing Agents Association of Eastern New York, were featured by afternoon plant visitations, followed by dinner and the regular stated business meeting. October 19th, the plant visitation was a tour of the West Virginia Pulp & Paper Co., Mechanicville, N. Y., and after the dinner meeting, the members held a commodity discussion and listened to talk on business trends by Ralph Bleak. The October plant visitation was at the Sterling-Winthrop Research Institute, Rensselaer, New York, with dinner at the Institute.

The association will hold its Seventh Annual Christmas party at Wolforts Roost on Thursday, December 7. The affair starts with cocktails at 6:30, dinner at 7:00, and then dancing. Tickets for members are \$10. per couple, and for guests \$12. per couple.

DOUBLE PROGRAM FEATURES SYRACUSE ASSN. MEETING

A regular meeting of the Purchasing Agents Association of Syracuse and Central New York was held on November 15 in the Onondaga Hotel, Syracuse.

The meeting featured two outstanding talks. The first, entitled "Wanted—Not Mice But Men" was given by Gay H. Brown, former justice of the Supreme Court of New York. The second speaker was R. J. Sloan, executive assistant, Crouse Hinds Co., who explained the new National Production Authority priority system.

1 1 1

STEEL WAREHOUSE SUPPLY SOURCES, VANCOUVER MEETING

"Sources of Steel Supply to a Steel Warehouse", was the subject of D. W. Atkins, manager of the steel department of McLennan, McFeely & Prior Ltd., at the monthly meeting of the Purchasing Agents Association of British Columbia, held in the Hotel Vancouver, B. C., on October 10. Mr. Atkins strongly advised buyers to anticipate their requirements well ahead of schedule because of the ever-increasing delays in factory deliveries.

Thirty members of the association attended the September plant visit to the Richmond Milk Producers Association.

At the monthly meeting of the Victoria Branch held at the Union Club on October 5th, Alf Mendum acted as chairman in a discussion on "Hoarding versus Protective Purchasing." Gerry Sharpe, City of Victoria, will be chairman of the Public Buyers' Convention, spring session, which is to be held in Portland next year.

1 1 1

LOS ANGELES ASSOCIATION HAS ACTIVE PROGRAM SEASON

The Purchasing Agents Association of Los Angeles held their first luncheon of the season on October 26, at the Elks Club, opening a heavy schedule of activity.

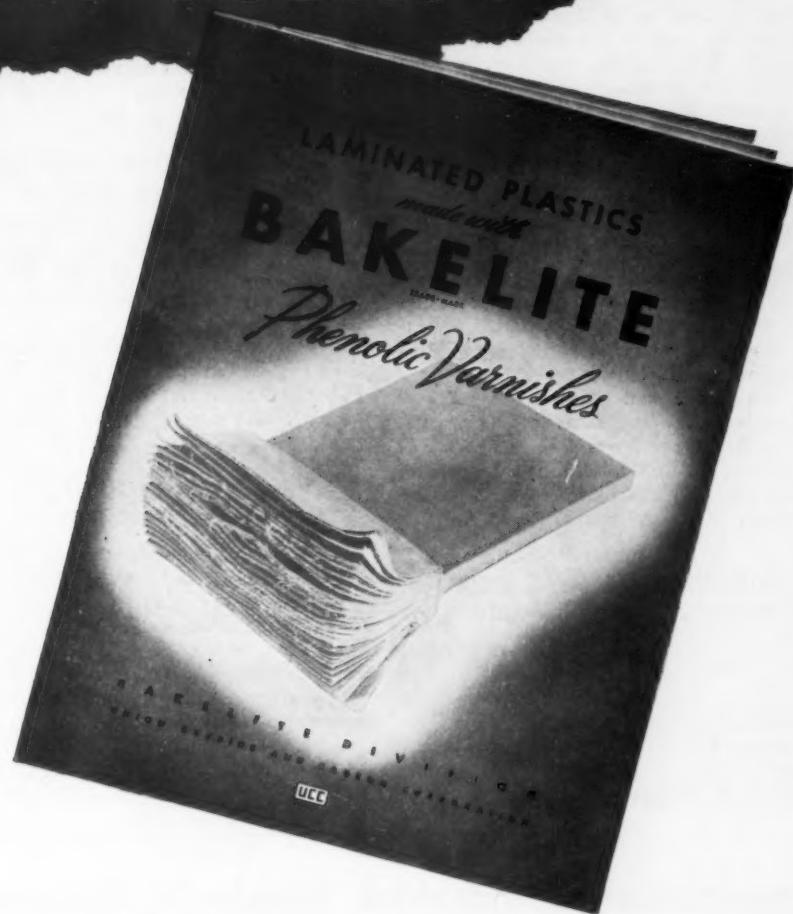
Feature of the meeting was a panel discussion on Regulation 2, NPA. Phillip Rypinski, purchasing agent of Square D. Electric Company acted as moderator. The panel was composed of A. B. Tietjen, purchasing agent, Southwest Welding & Mfg. Co.; J. L. Wells, purchasing agent, Lockheed Aircraft; Herbert L. Brewer, U. S. Navy Purchasing Office. In addition to the panel, the guest speaker was William D. Albertsmeyer of the Department of Commerce field office in Los Angeles.

The subject proved of immense interest to the 150 people present, and a brief but highly informative question and answer period followed.

Plans for November called for a plant visit to Johns-Manville Products Corp., Long Beach, Calif., on November 2, and a joint luncheon with the Electric Club of Los Angeles at the Biltmore Hotel on November 20. The club designated the affair "Purchasing Agents Day".

SEND FOR IT TODAY!

...The **WHAT**
WHY
WHERE
WHEN
and **HOW**



OF LAMINATED PLASTICS!

IF YOUR BUSINESS uses structural materials, decorative materials, or electrical insulating materials—you should know the fundamental facts about laminated plastics made with BAKELITE Phenolic laminating varnishes.

To supply these facts, Bakelite Division offers you a new, 36-page illustrated booklet telling what these materials are, how they are made, and how they can be used to improve the performance, beauty, economy, and sales value of your products.

Case histories of the various types and grades of

laminated plastics available for many fields of application are included in the guide book, along with test data on their physical, chemical, and electrical properties, and the methods employed in their fabrication and finishing.

A list of representative manufacturers using BAKELITE Phenolic Resins for the production of outstanding laminated plastics for countless end uses is included. Fill out and mail the coupon for your free copy of this indispensable reference and data book today!

Bakelite
TRADE-MARK
Phenolic
LAMINATING PLASTICS



Dept. BL-25
BAKELITE DIVISION, Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N.Y.
Please send my free copy of "Laminated Plastics Made with BAKELITE Phenolic Varnishes."

Name _____ Title _____
Company _____
Street _____
City _____ State _____

READING ASSOCIATION MEETS WITH SALES EXECUTIVES

The Sales Executives Club of Metropolitan Reading played host at a joint meeting of that organization and the Reading Purchasing Agents Association at the Iris Club in Wyomissing on October 16. This was the first joint meeting of the two groups.

Harold B. "Polly" Garrett, assistant director of the purchasing department of E. I. du Pont de Nemours and Company was the principal speaker. His subject was "What Makes a Salesman Click with the Purchasing Agent". In addition to the normal points of good grooming, knowledge of the product, and the desire for service to the customer, Mr. Garrett pointed out and discussed the indefinable characteristic of a good salesman which he labeled generally a "personality". He said that all other things being equal, that quality often got the order for the salesman.

Robert E. Reddy, Hoffman Industries, Inc., was unanimously approved as a new member of the purchasing group.

RUBBER COMPANY OFFICIAL GUEST AT HAWAII MEETING

Walter C. Burns, assistant general sales manager of the Pioneer Rubber Company, was the guest speaker at the regular luncheon meeting of the Purchasing Agents Association of Hawaii held on October 20. Mr. Burns commented on the productive capacity of the

rubber industry as compared to total requirement, and reviewed steps being taken by the National Production Authority to assure an adequate supply of rubber to meet all essential needs.

Members of the association were guests of the Pacific Refiners and the Honolulu Gas Company on October 26. A buffet supper was served following the tour of the gas plant.



CHICAGO WOMENS GROUP HEARS PAPER OFFICIAL

A regular monthly meeting of the Women's Division of the Purchasing Agents Association of Chicago was held on Thursday evening, November 9, in the Electric Club.

Guest speaker was Fred Leech, assistant sales manager for the Neenah Paper Company. His subject was "Science and Art of Paper Making".



ELSIE GRUBER GUEST AT M.P.A.C. MEETING

The regular monthly meeting of the Metropolitan Purchasers Assistants Club was held on Tuesday, November 14 in the Midston House, New York, N. Y. Guest speaker was Elsie B. Gruber, New York purchasing agent for Bigelow Sanford Carpet Company, Inc. Her subject was "Purchasing Plus Personality".

A moving picture entitled "The House That Faith Built" was shown. It tells the story of Anheuser-Busch, Inc.

PITTSBURGH ASSOCIATION AND SALES EXECUTIVES CLUB MEET

The November 21 meeting of the Purchasing Agents Association of Pittsburgh was a joint session with the Sales Executive Club of Pittsburgh. It was held in the Hotel William Penn.

The subject was "Buyers and Sellers—A Production Team". Representing the sales executives were: R. G. Robbins, Hubbard and Company; Douglas Porteous, First Investors Shares Corporation; and H. D. Krey, Homestead Valve Manufacturing Company. The purchasing profession was represented by D. E. Winslow, M. E. Carlisle, and George N. Powell. Carl M. Dozer, sales manager of WCAE, Inc, served as moderator.

The annual Christmas Party of the association will be held on December 12 at the Pittsburgh Athletic Association.



TRI-STATE ASSOCIATION HEARS COLLEGE PROFESSOR

A regular meeting of the Tri-State Purchasing Agents Association was held at the Ventura Hotel, Ashland, Ky., on October 17. Guest speaker was Prof. Conley H. Dillon, head of the political science department at Marshall College. Professor Dillon's subject was "Understanding International Politics in the Far East."

(Please turn to page 196)

Importance of Industrial Standards Discussed at Rochester Meeting

The Purchasing Agents Association of Rochester held its annual "Executive Night" dinner meeting at the Rochester Club on Wednesday, October 25. Guest speaker was Thomas D. Jolly, vice-

president in charge of engineering and purchasing, Aluminum Company of America. His subject was "Standards and What They Mean to Industry."

The meeting scheduled for November

29 was under the general direction of W. B. Wight. Plans included a forum panel of representatives of the services who were expected to participate in a discussion on governmental procurement.



View of speakers' table at Executive Night dinner meeting of the Purchasing Agents Association of Rochester. Guest speaker Thomas D. Jolly, Vice President in Charge of Engineering and Purchasing, Aluminum Company of America, is fifth from the left.



New Improved Gulf Lubricants

offer effective help in your efforts to cut costs!

OUT of the Gulf Research Laboratories have come more new and improved petroleum products to help you gain an edge in the "Battle of costs"!

New Gulfspin, revolutionary spindle oil, helps textile mills reduce maintenance and power costs.

New Gulf Micro Bearing Oil and Gulf Special Instrument Oil provide long-lasting gum-free lubrication for small precision bearings and gears.

New Gulfube Motor Oil X.H.D. reduces sludge deposits and engine wear, extends overhaul periods for light delivery and taxicab fleets.

New Gulf Block Grease provides a new kind of lubricating performance in quarries and cement plants.

New Gulf Cam Grease helps coal mines reduce maintenance costs for shaker screen cams and eccentrics, eliminates lubrication troubles.

These are just a few of the quality Gulf products that can help you improve production and reduce costs. Call in a Gulf Lubrication Engineer today and ask him to recommend the most suitable oils and greases for your equipment and operating conditions. Write, wire, or phone your nearest Gulf office.



Gulf Oil Corporation • Gulf Refining Company

GULF BUILDING, PITTSBURGH, PA.

Sales Offices - Warehouses

Located in principal cities and towns throughout
Gulf's marketing territory

Equipment Buying Course Sponsored By Purchasing Agents Association of New York

"How to Buy Equipment" is the theme of the equipment buying course sponsored by the Purchasing Agents Association of New York. The course was designed to answer the question: "How can the purchasing agent do a better job in the purchase and sale of equipment?" The first session, "The Problem of Purchasing Equipment," second session, "The Coordination of Purchasing and Engineering Service"; third session, "Coordination of the Purchasing Department with Other Departments"; fourth session, "Purchasing Techniques"; fifth session, "How We Buy." The



Don Lyons, Johns Manville Corp., New York, president at first session of the PAANY course on "How to Buy Equipment." Gentleman at left is C. H. Morris, discussion leader. Secretary "Jep" Leonard of New York Association is at right

chasing of equipment used by his company?" Cooperating with the association's educational committee in the presentation of the course, the first session of which was held October 16, and which includes a series of five sessions, the Association of Consulting Management Engineers, New York, is supplying persons from its member companies for discussion leaders. The registration fee for the series is \$35.00, which includes dinners, and about forty members signed up for the course.

The first session dealt with "The Factors that Determine the Selection of

last session was a discussion panel consisting of four Purchasing Agents of different companies describing the methods used by their companies in handling equipment purchases.

The panel members were J. R. Boyle, Prudential Insurance Co.; Harold W. Macintosh, L. O. Koven & Bro. Inc.; Frank S. Romane, The Babcock & Wilson Co., and W. K. Schmalzreidt, American Can Company.

Further information in regard to the course may be obtained from J. H. Leonard, executive secretary, P. A. A. N.Y., 120 Broadway, New York City.

ADMINISTRATIVE COURSE PHILADELPHIA ASSOCIATION

The Purchasing Agents Association of Philadelphia has made the following Administration Course sessions available to its members:

November 6: "Coordination of Purchasing and Engineering", E. L. Helwig, Development and Engineering, Rohm & Haas Company.

November 20: "Economics of Inventory Control", H. R. Wilson, Area Manager, Bell Telephone Laboratories, Murray Hill, N. J.

December 4: "Coordination of Purchasing with Production and Sales", R. L. Bowles, Armstrong Cork Co., Lancaster, Pa.

January 8: "Reports to Management", S. W. MacKenzie, Purchasing Agent, United States Rubber Co., New York.

January 22: "Transportation and the Purchasing Agent", Richard C. Colton, Traffic Manager, Radio Corporation of America, Camden, N. J.

February 5: "Purchasing Department and the Law."

February 19: "Forecasting and the Purchasing Agent", Robert C. Swanton, Director of Purchases, Winchester Repeating Arms Co., New Haven, Conn.

March 5: "The Purchasing Agent, a Member of Top Management Policy Team", Andrew H. Phelps, Vice President in Charge of Purchasing and Traffic, Westinghouse Electric Corporation, Pittsburgh.

Further information in regard to the course may be obtained from Harold I. Patten, executive secretary, Purchasing Agents Association of Philadelphia, 1518 Walnut St., Philadelphia 2, Pa.

Colyer Snyder, whose subject was "The Lash in a Newsflash", was the principal speaker at the association's November meeting, which was held in the Bellevue-Stratford Hotel, November 9th. The dinner meeting was preceded by a forum held by The Banking, Insurance and General Office Buyers' Group, the subject for discussion being "Stationery".

1 1 1

CIVILIAN DEFENSE TOPIC AT TWIN CITY MEETING

The Twin City Association of Purchasing Agents met on Wednesday evening, November 8, at the Saint Paul Athletic Club, St. Paul, Minn. Principal speaker was Col. Ernest B. Miller, state director of civilian defense, and Paul Wilson, atomic research engineer. They discussed the "National Situation on Civilian Defense". A film on the subject was also shown.

"Escalator Clauses" was the subject of a pre-meeting forum.

Members of the association visited the Theo. Hamm Brewing Company in the afternoon.

New members of the association are A. D. Tourangeau, Bemis Bro. Bag Company, and Ivan Woolery, W. S. Nott Company, both of Minneapolis

1 1 1

PURCHASING IN WARTIME LOOKING BACKWARDS—MONTREAL

"Purchasing in Wartime—Looking Backwards" was the subject of George K. Sheils, C.M.G., who was Deputy Minister, Department of Munitions and Supply from 1940 to 1945, guest speaker at the October 17th meeting of the Purchasing Agents Association of Montreal, held in the Mount Royal Hotel.

Saturday morning, October 28, members of the Montreal Association made a special plant visit to Ayer's Limited, Lachute Mills, following the plant inspection with informal buffet luncheon at the Lachute Golf & Country Club, Lachute, Quebec. The cost to each member was \$2.50 to cover the luncheon, transportation being provided.

For the eleventh season, John Crawford is commencing another series of lectures on Purchasing at Sir George Williams College. The present course began October 5th, and will continue for fifteen lectures.

The Panel Discussion Group of the Montreal Association held its first meeting of the season at the Mount Royal Hotel. The panel consists of J. Bruce Jordan, general purchasing agent, National Drug & Chemical Co. of Canada Ltd., Harold A. Corriveau, purchasing agent, St. Lawrence Sugar Refineries Ltd., John V. Loucks, manager of purchases, Sherwin Williams Co. of Canada Ltd., and Joseph Hillwood, export buyer, Aluminum Company of Canada Ltd. The chairman of the group is E. Conley. The topic of the first meeting was selecting "sources of supply", the leaders being Messrs. Hillwood and Jordan.

(Please turn to page 198)

Independent laboratory test for a leading machine tool builder reveals

WHY "BLU-MOL"® OUTPERFORMS ALL OTHER BLADES TESTED



Some time ago, a leading machine tool builder tried out a number of different hack saw blades under normal production conditions. "Blu-Mol" blades proved so outstandingly superior that the company decided to find out why and sent them to an independent testing laboratory.

Here is the report they received:

Sample No. 407564

1-3-50

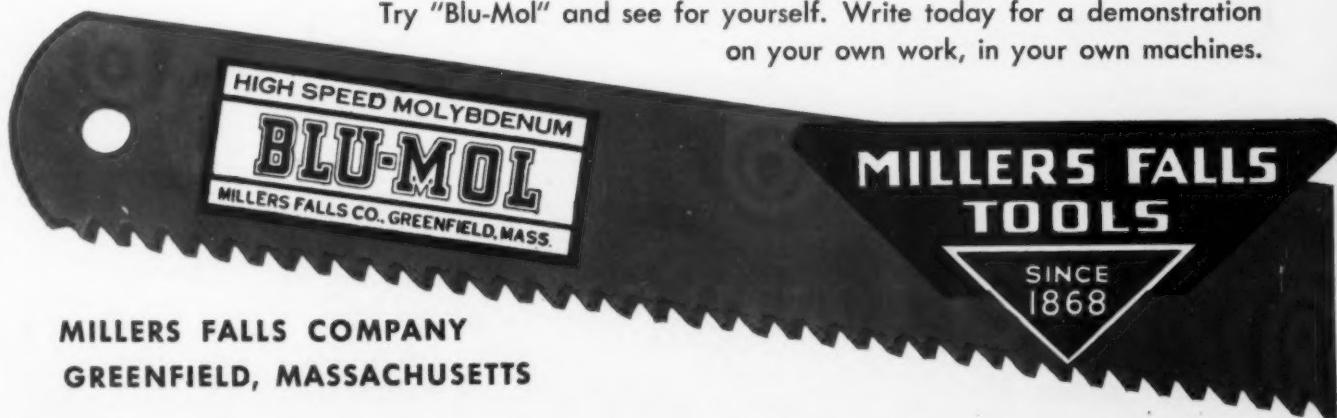
The "excellent" service given by this blade is apparently the result of three factors:

First, homogeneity of steel. The stock shows no evidence of high concentration of carbides in stringer formation which creates weak spots and brittleness.

Second, the relatively high hardness (C64.5) combined with fine grain size gives the necessary combination of tooth strength and toughness needed for a long service life. Usually hardness above C64 is attained at the sacrifice of grain fineness.

Third, surface condition. There is no evidence of lowered surface carbon content so commonly found in hack saw blades. This manifests itself by greater resistance to tempering and a consequent retention of a larger percentage of white martensite.

"Blu-Mol" steel is part of the secret of "Blu-Mol's" tremendous cutting ability. But even more important is the exclusive, precision heat treating process used only on Millers Falls blades. In plant after plant, "Blu-Mol" blades are setting production records . . . cutting hacksawing costs. Try "Blu-Mol" and see for yourself. Write today for a demonstration on your own work, in your own machines.



MILLERS FALLS COMPANY
GREENFIELD, MASSACHUSETTS

IT'S A *mac-it*[®]

PRONOUNCED
"MACK-IT"

Mac-it Hollow Pipe Plugs
—for accuracy, safety,
uniformity and strength.



Better, Faster Service with this Complete Mac-it Line!

Because many standard types of Mac-its are available throughout the country for quick delivery, and because specials can be engineered to your own specifications, you'll find it pays to investigate Mac-its first.

Mac-it's 35 years' experience in the manufacture of heat-treated, alloy steel screws is your assurance of precision, uniformity and strength. Sold through leading industrial distributors from coast to coast and in Canada. Write for new Mac-it catalog today!

Other Mac-it products include:

- Socket Head Cap Screws
- Hollow Set Screws
- Stripper Bolts
- Hollow Lock Screws
- Socket Screw Keys
- Square Head Set Screws
- Hexagon Head Cap Screws
- ... and many others

Marketed Nationally Since 1913 by
STRONG, CARLISLE & HAMMOND COMPANY
Cleveland 13, Ohio

WASHINGTON ASSOCIATION HEARS N.P.A. OFFICIAL

Dean Bowman, deputy administrator, Industry Operations, National Production Authority, Department of Commerce, addressed a recent dinner meeting of the Purchasing Agents Association of Washington, D. C., held at the Burlington Hotel. His subject was "Material Controls for National Defense".

Through the courtesy of the Hill-Chase Steel Company, Baltimore, an educational film showing the rolling of sheet and strip steel by the Bethlehem Steel Company was shown. The largest number of members of the association in recent months attended.

CENTRAL IOWA ASSOCIATION VISITS MAYTAG PLANT

Members of the Central Iowa Purchasing Agents Association were guests of the Maytag Company at a recent meeting. Plant visitations were held at Plant One and Plant Two. A noon luncheon was served to those who made the morning trip.

In the afternoon a program on "Work Simplification" was conducted by the Maytag industrial engineering department.

The evening banquet session at the Hotel Maytag featured an address by Emmett Butler, director of public and employee relations for the company. His subject was "Public Relations in Purchasing." The Newton, Iowa chapter of S.P.E.B.S.Q.S.A., Inc., also entertained the group with some barber shop renditions.

The November 14 meeting at Hotel Savery, Des Moines, was designated Executives Night. Principal speaker was B. C. Berg, superintendent of Newton, Iowa schools. His topic was "How Red is Our Balance Sheet in Europe?"

BALTIMORE ASSOCIATION HAS PANEL DISCUSSION

A regular monthly meeting of the Purchasing Agents Association of Baltimore was held on Wednesday, October 18, at the Lord Baltimore Hotel. The meeting was in charge of the Educational Committee, and featured a panel discussion on Current Purchasing Problems.

H. N. MCGILL SPEAKER AT NEW ENGLAND MEETING

A regular meeting of the New England Purchasing Agents Association was held in the Hotel Vendome, Boston, on Monday, November 13.

Guest speaker was Herbert N. McGill, editor of McGill Commodity Service, Inc., and a member of the consulting staff of the National Association of Purchasing Agents. Mr. McGill's subject was "Purchasing Problems".

An afternoon forum session was held under the direction of Edward C. Bursk, associate professor of business administration at the Harvard Business School.

Are Your Catalog and Information Files Up-to-Date?

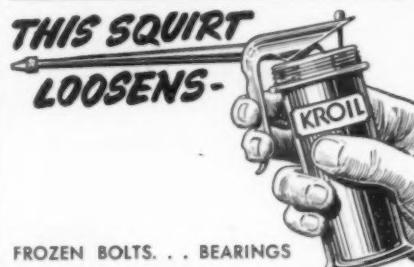
Here's a way to add the latest data on new developments to your catalog and information files with a minimum of effort.

The Reader Service Department of Purchasing Magazine will obtain for you any of the new trade literature listed on pages 19, 20, 22, 24 and 166 or additional facts on any of the products mentioned in the "New Products and Ideas" section, pages 128-160.

Simply write on your company letter-head, indicating the numbers of the items on which you want literature or further information.

Check these pages now, mentioning month of issue, and send your request to:

**Reader Service Department
PURCHASING MAGAZINE
205 E. 42nd St., New York 17,
N. Y.**



It's fast and accurate—shoots 15 feet—a drop or a squirt. It's labeled Kroil—so you can grab it quickly when a frozen bolt, screw or bearing starts to cost expensive time or threaten production.

That is when Kroil creeps into millionth inch spaces to soften rust, dissolve gum and supply lubrication to loosen the parts. It's fast and it's positive.

"Kano Kroil always opens up the tight fitting covers on fire extinguishers for us. It is truly a wonderful preparation. We have found such covers we could not force off with a blow of a hammer. Several minutes' seepage of Kroil did the trick," so says a service organization for fire extinguishers.

Kroilers are priced at \$1.50 each and are well worth it. As an inducement to try Kroil we offer the combination of one Kroiler and one gallon of Kroil—(listed at \$3.50) for \$4.75, f.o.b. factory.

If you are not one of the 8,500 industrial plants already using Kroil, send for a gallon on the proposition that it will loosen the most stubborn frozen part or you get your money back.

KANO LABORATORIES
1083 Thompson Lane, Nashville, Tenn.

B.F. Goodrich



**Industrial tire analysis
cuts costs up to 50%**

*Get this
man's advice
on tire
and wheel
problems*



ANALYSIS PLAN will save you money

HOW IT WORKS:

Without obligation, the B. F. Goodrich man who specializes in industrial tire and wheel service will survey your operation. He'll study the loads, the type of hauls and equipment, and the floors and hauling surfaces. Then, he'll recommend the best type, size, tread and tire compound for your work. He'll also give you helpful suggestions on tire care and maintenance. Studies prove that this service saves up to half of tire and wheel costs in 2 out of 3 cases.

WHY IT WORKS:

This B. F. Goodrich man is a representative of the *only* company

which offers a *complete* line of industrial tires in all sizes and tread compounds. In this way, his advice is impartial—unbiased. He offers BFG's complete line of industrial tires including pneumatics, puncture-sealing inner tubes, solids (all types) and Zero-Pressure semi-pneumatics. He offers a wide choice of tread designs and a choice of 7 different tread rubber compounds including the famous oil-proof compound.

Mail the coupon for full details at no obligation. A SIMILAR PROGRAM IS NOW READY FOR MANUFACTURERS OF INDUSTRIAL HAULING EQUIPMENT.



The B. F. Goodrich Co.
Department TW-78
Akron, Ohio

Please give me additional information on your Tire and Wheel Analysis plan.

Name _____

Title _____

Company _____

City _____ State _____



Bituminous is basic—the main-spring of America's might. Far-thinking executives—those who study existing facts, consider long-term possibilities, and prepare for emergencies—know this. So the vital decision so often made is, "build for bituminous."

Amid the uncertainties of the future is this fact: In the area served by the Baltimore & Ohio, lie vast, untapped reserves of excellent bituminous coals. They're in wide variety, and highly mechanized mines can produce them properly prepared for every requirement of modern industry.

Year after year, tireless research has made bituminous increasingly dynamic. Its further possibilities are tremendous. B&O, too, is constantly seeking better ways of serving the bituminous industry and its customers. In recent years, millions of dollars have been spent to improve B&O facilities for bituminous distribution. Here's real help for bituminous in guaranteeing the greatness of American industry for years to come. *Ask our man!*

BITUMINOUS COALS FOR EVERY PURPOSE

—from modern
mines like
this→



BALTIMORE & OHIO RAILROAD

Constantly doing things —better!

EFFICIENT PAPER WORK SUBJECT AT DAYTON MEETING

B. B. Klopfer, executive assistant of the Standard Register Co., Dayton, O., spoke on "Work Your Papers—Don't Let them Work You", at the November 9th meeting of the Purchasing Agents Association of Dayton. The meeting was held at the Standard Register Company's auditorium, the company acting as host for the evening. Following the meeting, some of the members enjoyed the results of a turkey raffle.

Two new members were duly welcomed into the association, namely, P. W. McGee of the M. J. Gibbons Supply Company, and Mark L. Furrey, Ohmer Corporation, Dayton. The December meeting will consider the subject of personnel and personnel work.



HANDBOOK ON NON-FERROUS FORGINGS PUBLISHED

Culminating many months of intensive work, the Copper & Brass Research Association has published a handbook on brass and bronze forgings which is entitled "Brass Forgings Make Better Products," which among other useful information, tells what data is needed with inquiry or purchase order for brass forgings.

The handbook explains how brass forgings developed, what they are and how they are produced. It presents several interesting examples, or case histories, in which brass and bronze forgings overcame particularly knotty problems—sometimes a fabricating problem, sometimes a performance problem.

Another section of this handbook offers a classification of forgings into eight basic types which are illustrated by means of drawings and photographs of actual brass and bronze forgings. Finally, there is included a check list of information required when submitting an inquiry or an order for forgings of brass, bronze or another copper-base alloy.

Copies will be sent without cost upon request to: Copper & Brass Research Association, 420 Lexington Avenue, New York 17, New York.



"FACTS ABOUT OIL"

"Facts About Oil", a compact collection of facts and figures on the domestic oil industry, has been published by the Department of Information of the American Petroleum Institute. The 32-page booklet is an informative summary on oil, its origin and progress, exploration, drilling, production, reserves, transportation, refining, supply and demand factors, marketing, uses of oil, and other data. Graphs, charts and other drawings supplement the printed matter. Single copies are available from the Department of Information, American Petroleum Institute, 50 West 50th St., New York 20, N. Y. For company or association distribution, copies are available at a cost of \$6.00 per hundred.

(Please turn to page 204)

BUSINESS IN MOTION

To our Colleagues in American Business ...

The manufacture of a rectangular brass can or shield for a coil would not seem to be a difficult matter. Brass is noted for its easy workability. It can be stamped, drawn, spun, machined, polished, plated, and so on. However, there are a number of brasses containing varying proportions of copper and zinc and sometimes other metals, and Revere furnishes these alloys in various tempers. To take maximum advantage of the goodness of brass, it is essential to specify the metal with due regard to the fabrication processes to which it is to be subjected.

Take the case of these brass cans. They were being produced in ten steps: blanking from strip; draw; anneal; draw; anneal; draw; anneal; sizing draw; trim; tin both ends. This seems to be a simple, easy and conventional method, yet there was a high percentage of rejection due to cracking or tearing of the metal in drawing. There was also an "orange peel" effect, undesirable in appearance, and which sometimes interferes with plating. The chief trouble, however, was tearing.

The Revere Technical Advisory Service was asked to cooperate and obtained complete data on metal specification, annealing time and temperature (1350°F.) and progressive samples. Information and samples were forwarded to Revere Research, which made a thorough study of them, including photomicrographs to determine the grain size in each of the samples. It was found that the brass

strip had too large and irregular a grain structure, and that the annealing procedure accentuated this condition. It was recommended that strip be specified in 70/30 cartridge brass, with a fairly uniform structure and the proper grain size instead of the size being purchased. Then, two anneals could be dropped, and annealing temperature reduced to 1000°F. for one hour. Conclusion: A better product, increased production at less cost, and lessening of the "earing" seen in the sketch of the original samples.

Two things stand out in this matter. One is the advisability of letting your suppliers know how you intend to fabricate or process the materials you buy, in order that they can work closely with you on specification. The other is that suppliers, no matter what they

sell, can and are glad to collaborate with you on fabrication problems. Revere is delighted to give its Research engineers such tasks as described here; so are other good firms, not only in metals, but in other industries such as chemicals, wood, felt, plastics, leather, paper and so on. It will pay you to take advantage of the brains of your suppliers.

Incidentally, the term "grain size" is another way of referring to temper, because annealing and working determine grain size. If you would like to know more about this subject, there is an extended, though non-technical, discussion of it in "Fundamental Characteristics of Revere Metals," which will be sent on request.

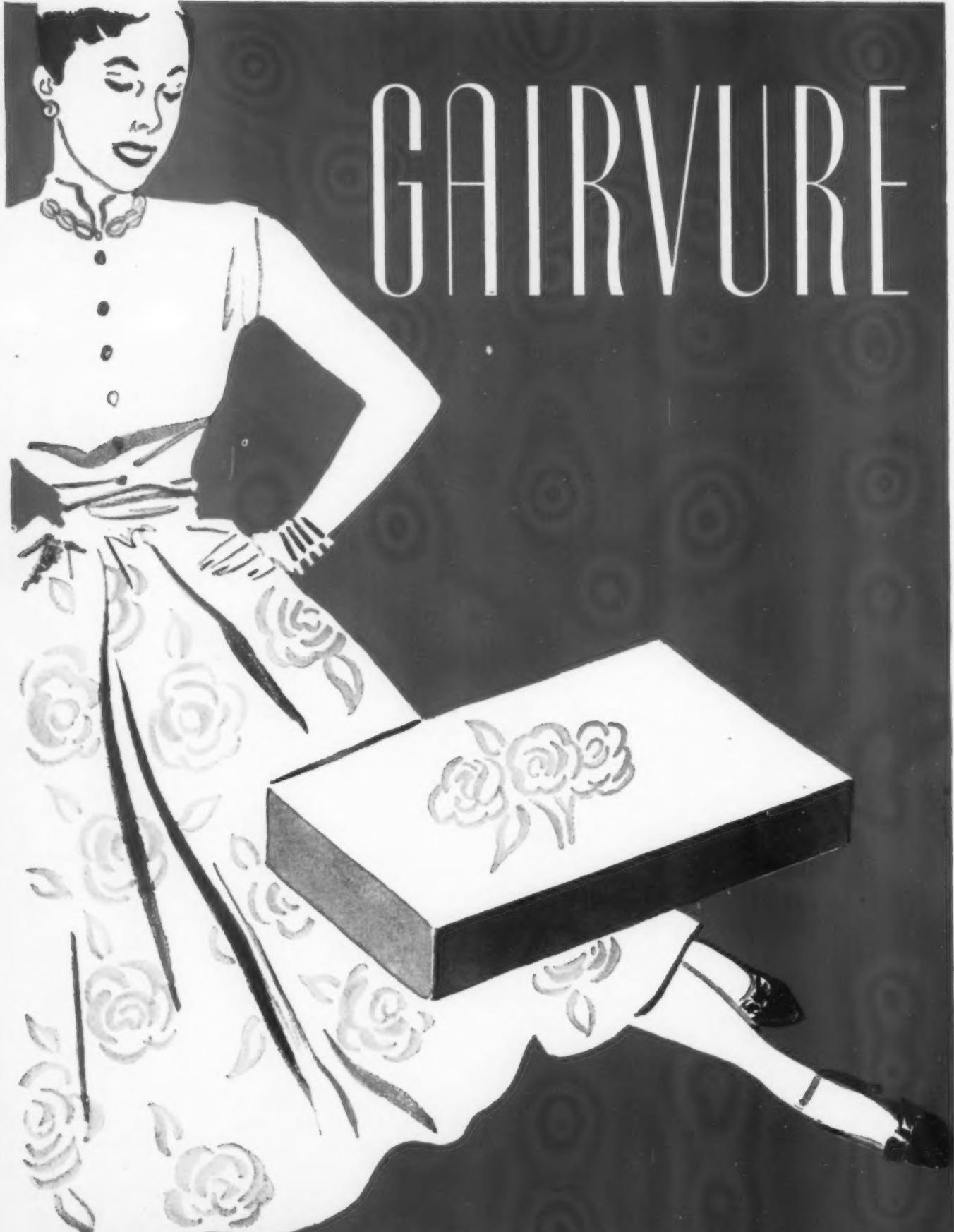
REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801



Executive Offices:

230 Park Avenue, New York 17, N. Y.



GAIRVURE

ROBERT GAIR COMPANY, INC.,
PAPERBOARD • FOLDING

..... multi-color folding cartons
provide dynamic sales promotion
for counter and window display

Sell on Sight!

Sales, profits and prestige of your products really SOAR when they go to market in GAIRVURE multi-color cartons.

GAIR'S new, scientific GAIRVURE printing on paper-board gives absolute fidelity in color reproductions. Yes, GAIRVURE opens up a NEW field of smart, artistic packaging for your product.

Through the selling influence of GAIRVURE PACKAGES, dealers everywhere will respond to the opportunity of displaying and promoting the sale of your merchandise.

Always remember . . . your product in GAIRVURE cartons, SELL ON SIGHT . . . and you'll enjoy increased sales with the NEW, multi-color GAIRVURE packages.

SEND FOR BROCHURE AND SAMPLES

Upon request we will gladly send descriptive literature and samples of multi-color GAIRVURE. Write today.



SHIPPING CONTAINERS GAIR

are produced in strategically located Gair Plants. Gair service is always dependable.

155 EAST 44th STREET, NEW YORK • TORONTO

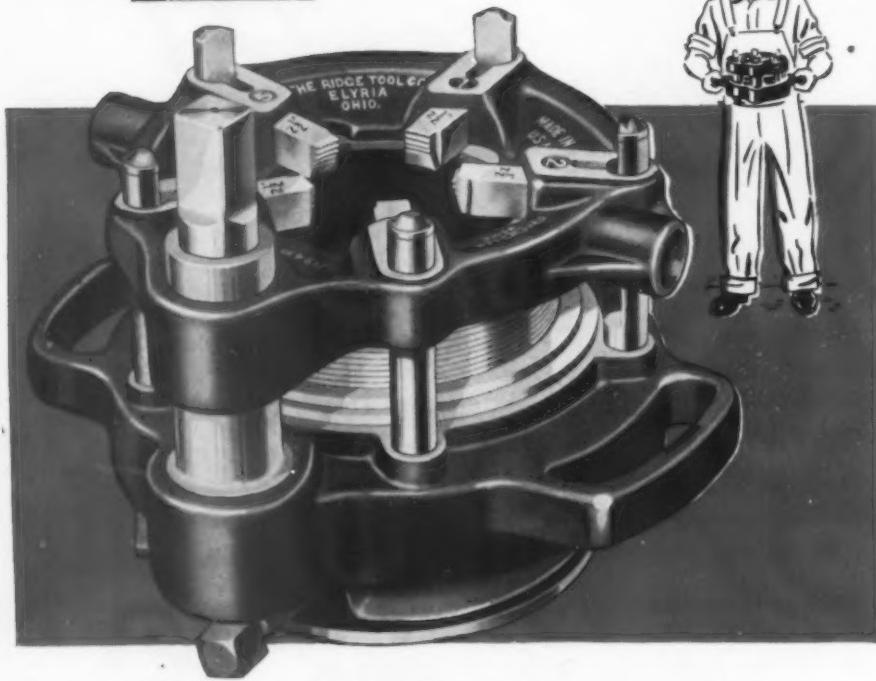
CARTONS • SHIPPING CONTAINERS

A Geared Pipe Threader

**THAT'S EASY TO
WORK
WITH**



"These big solid handles make it a cinch to lift and carry the RIDGID 4P"



RIDGID No. 4P cuts perfect threads on 2½" to 4" pipe

● No matter how good a threader is, it's a lot better if it's easy to handle. RIDGID 4P has balanced loop handles so you can easily pick it up and put it on pipe—even when it's greasy and you're tired. Mistake proof workholder sets to size before you put it on pipe, one screw to tighten, no bushings. 4 sets of 5 high-speed steel chaser dies give clean accurate threads on 2½", 3", 3½" and 4" pipe. Ratchet handle furnished—RIDGID Universal Drive Shaft and Power Drive available for power-threading. For perfect threads, easily, order the RIDGID 4P from your Supply House.

RIDGID
WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

BOOKLET DESCRIBES THREE-IN-ONE PREPAINT CLEANER

How a new prepaint metal-cleaning material, Oakite Compound No. 33, performs three jobs in one operation is discussed in a special booklet just issued by Oakite Products, Inc., 154 Thames St., New York. Booklet describes how Oakite Compound No. 33, used in tanks or by hand, (1) removes oil, (2) removes rust, and (3) prepares metal for excellent paint adhesion in a single operation.

Oakite Compound No. 33 has solvent and detergent properties that are extremely effective in removing stamping and forming oils, rust preventives, carbon smuts, soldering and welding fluxes, identification inks and similar soils. In addition, this material possesses acid ingredients that act on rust, heat scale, tarnish and other oxides, as well as special accelerating agents that, reportedly, make the removal of rust simultaneous with removal of oil) an amazingly fast operation. In its conditioning action on metal, Oakite Compound No. 33 microscopically etches steel and cast iron and converts the surface layer of metal into a thin film of insoluble phosphates to assure excellent adhesion of paint to metal. The etching and conditioning of this material on aluminum sheet and aluminum castings is similar, the folder states.



SYLVANIA ANNOUNCES PURE TUNGSTEN ELECTRODES

Pure tungsten electrodes having a melting point about 6000 deg. F. suitable for atomic-hydrogen and gas-shielded electric arc welding of a wide range of metals, are announced by the Tungsten & Chemical Divn. of Sylvania Electric Products Inc., Towanda, Pa.

The use of tungsten electrodes in inert gas atmospheres prevents the formation of oxides, nitrides and other contaminants, according to Sylvania. Inert gas atmosphere welding also permits faster welding, narrower heat-affected sections, less distortion, elimination of flux, and improved appearance of joints and frequent elimination of filler metal when thin sections are joined. The process may be successfully applied to the welding of aluminum, beryllium copper, brass, copper, copper to stainless, everdur, fernico, hastelloy C, inconel, lead, magnesium, molybdenum, monel, nickel alloys, phosphor bronze, stainless steels, tantalum and tungsten.

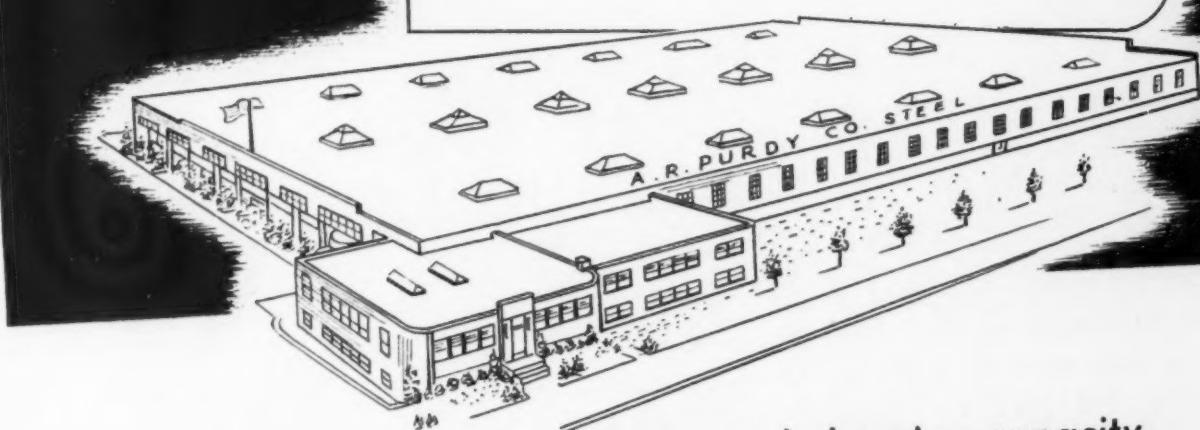
The new electrodes are available in any diameter and length, although generally used diameters range from .040" to .250" in 3", 5", 7", 12" and 18" lengths, and are supplied in standard packages of ten electrodes. They are supplied with chemical cleaned and etched finish or centerless ground finish for collet feeds on automatic equipments requiring electrodes having maximum smoothness and uniformity of dimension.

(Please turn to page 206)

STEEL and
ALUMINUM

a. R. Purdy Co.
INC.
LYNDHURST, NEW JERSEY

COLD FINISHED STEEL
STAINLESS STEEL
COLD ROLLED STRIP STEEL
COLD ROLLED SHEETS
SPRING STEEL
TUBING
DRILL ROD
ALUMINUM SHEETS
COILS AND BARS



Use our precision slitting and shearing capacity
to convert your surplus items to usable inventory

tough TRIPLEX THREADED FASTENERS

assure MAXIMUM dependability



CAP SCREWS

Sizes to
1" x 8"



MACHINE BOLTS

Sizes to
1" x 60"



CARRIAGE BOLTS

Sizes to
1" x 60"



STOVE BOLTS

Sizes to
1/2" x 6"



SEMI-FINISHED NUTS

Sizes to 1 1/4"



SET SCREWS

Sizes to
3/4" x 4"



STEP BOLTS

Sizes to
1/2" x 6"



PLOW BOLTS

Sizes to
3/4" x 20"



LAG BOLTS

Sizes to
3/4" x 20"



CASTELLATED NUTS

Sizes to 1 1/4"

Write today for catalog and wall chart for easier ordering

* THE TRIPLEX SCREW COMPANY *

5331 GRANT AVENUE • CLEVELAND, OHIO

TRIPLEX *for* **TOUGHNESS**
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

DEVELOPING STEEL SUPPLY FOR NEW ENGLAND

The present status of the continuous casting of steel and the possibilities it holds for the New England area after 1952 were outlined in a communication to the American Academy of Arts and Sciences, Boston, Mass., by Isaac Harter, chairman of the board of The Babcock & Wilcox Tube Company.

Discussing the development of the new steelmaking process which is being carried on jointly by The Republic Steel Corporation and his company, Mr. Harter stated that continuous casting of steel could presently be applied to about 15% of the nation's output and that improvements now being perfected would increase its application to between 25 and 30 per cent of steel production.

Successful large scale experimental continuous casting of steel which had been sought by the steel industry for more than 100 years, was announced two years ago by the two companies. The pilot plant for the operation is located at the B&W Tube Company works in Beaver Falls, Pa. The two companies are working steadily to bring the process to a point where it can be applied by industry to reduce the cost of steelmaking and make possible the construction of steel mills for making moderate quantities of steel without resorting to the tremendous expenditures required for plants of conventional design.

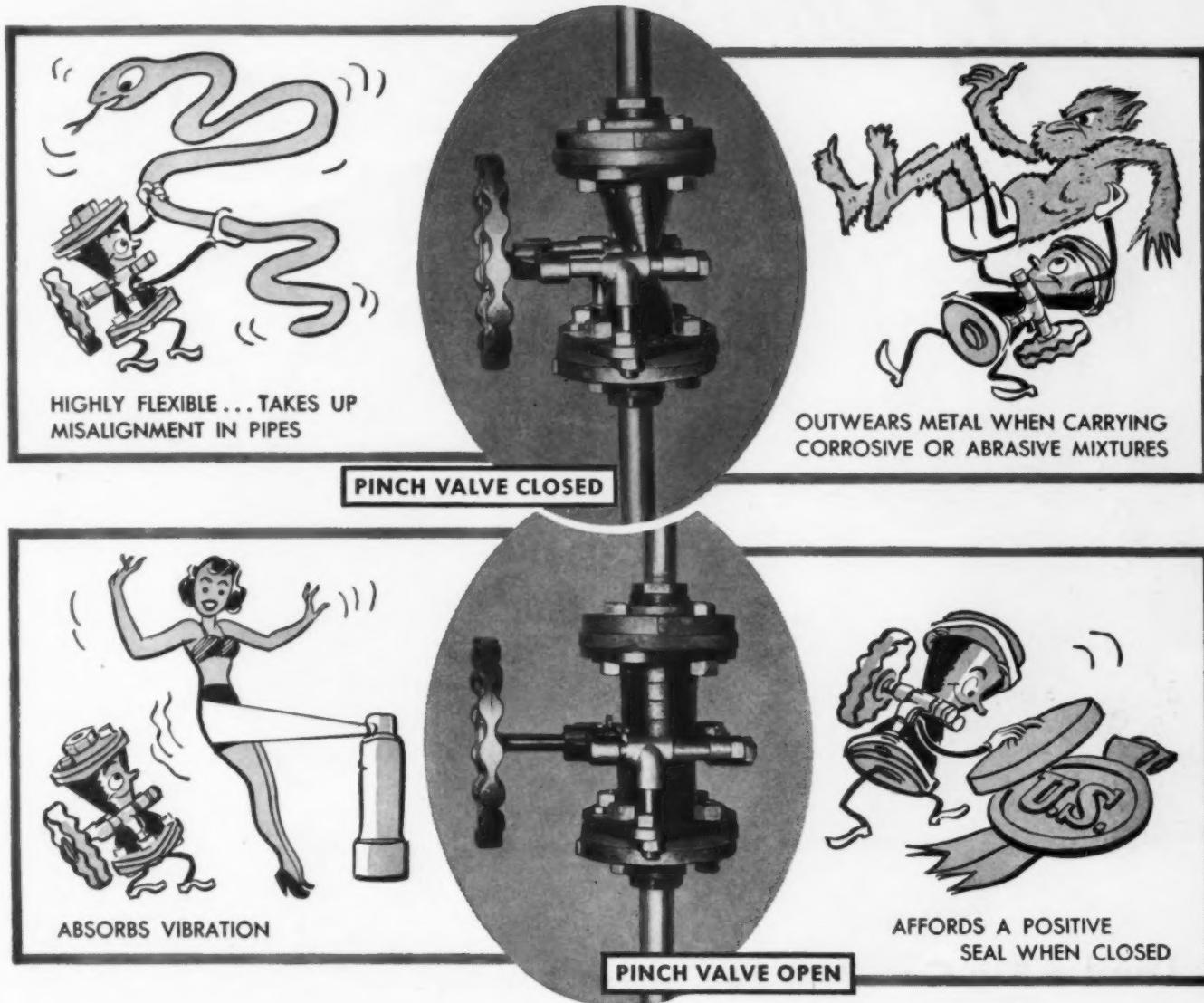
In analyzing the New England situation, Mr. Harter pointed out that the first decision to be made would be whether a new steel mill should be fully integrated—that is, start with coal, iron ore and other basic materials—or non-integrated and start with the melting of scrap steel obtained locally. "This is a basic question," he said, "because, even though an economical supply of metallurgical coke may be available, cheap iron ore will not be available for two or three years. Even then, the most economical supply will be obtainable only from deposits which normally would require sea transportation subject to the hazards of war. Furthermore, the investment required for an integrated steel mill of the same annual capacity would be two to three times that of the non-integrated mill."

With regard to various studies being made in the New England area to secure a more economical source of steel, Mr. Harter pointed out that "if these studies result, as they probably will, in showing that the local supply of scrap and the demand for steel products conveniently made from it are in reasonable balance, then it would seem that there is much to be said for beginning with scrap, and leaving the relatively large financial and supply problems involved with a fully integrated steel mill to some later time."

Mr. Harter explained that at present it was possible to cast oval cross sections of 25 to 40 square inches by the continuous casting method. This size, he pointed out, lends itself well to rolling into small bars, narrow width strip

(Please turn to page 210)

NEW PINCH VALVE SQUEEZES OUT NEW PRODUCTION ECONOMIES



FUNCTIONS—For use on pipelines carrying abrasive, corrosive mixtures or raw chemicals. Eliminates "water hammer." Breaks up galvanic action in pipe lines. Can be operated partly open to control flow.

CONSTRUCTION—Abrasion-resistant or corrosion-resistant compounds, or neoprene for oil resistance, or butyl rubber for high heat and severe acid conditions, or pure gum stock for food and beverage conveyance.

MAINTENANCE—Can be refitted to new valve bodies, reducing replacement costs.

No packing or repacking needed. Compact design, with mechanism, retaining rings and pinch valve body in a single unit—an advantage where space is limited.

Let this new valve reduce your operating costs. Write to address below.

PRODUCT OF
U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N.Y.



... You may
Land a Big One that you never counted on

You may get a strike that will amaze you . . . and your customers, too. You may net a whopper that will weigh up to be the biggest sales advantage your product ever had . . . the hidden ability to count to your customers' advantage. Like the milling machine builder who

found he could build-in a Veeder-Root Counter to pre-set and control depth of cut.

And on such fishing expeditions, V-R engineers are expert (and remarkably successful) guides. When do you want to try your luck? Just write.

Series 1200 Magnetic Counters (for AC & DC), widely used with photo-electric relays or electric-eye equipment. These and scores of other electrical and mechanical counters are shown in FREE 8-page "COUNT BOOK" below. Send for your copy, today.



Veeder-Root

COUNTERS

"Count Everything on Earth"
VEEDER-ROOT INC., HARTFORD 2, CONN.

Veeder-Root Inc., Hartford 2, Conn., (NEW Telephone Number: HArtford 7-7201)

In Canada: Veeder-Root of Canada, Ltd., 955 St. James Street, Montreal 3
In Great Britain: Veeder-Root Ltd., Kilspindie Rd., Dundee, Scotland

*In all the world
there's only one TUBE-TURN
Welding Fitting as shown
by this trade mark... the
right mark for every need
in welding fittings
and flanges.*



*More than ever, the services of your TUBE-TURNS'
Distributor can be important to the smooth
operation of your business.*



TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY DISTRIBUTORS IN ALL PRINCIPAL CITIES
DISTRICT OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • CHICAGO • HOUSTON • TULSA • SAN FRANCISCO • LOS ANGELES

In Canada... Tube Turns of Canada Limited, Chatham, Ontario

Since 1887

MILWAUKEE WROUGHT WASHERS

Better
WASHERS
... Competitively Priced

Large volume production, the most advanced methods and facilities, plus more than 60 years of continuous experience in the manufacture of Washers, are factors that enable us to offer you top quality washers and stampings at competitive costs. Over 22,000 sets of dies for making Washers of every type (Standard and Special), from every type of material, for every purpose, in any finish. STAMPINGS of all descriptions; Blanking, Forming, Drawing. Submit your blueprints and quantity requirements for estimates.

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

2113 S. BAY ST., MILWAUKEE 7, WIS.



THE NEED OF THE HOUR

...more efficient production



AMERICA needs continued production in every plant . . . every worker must get the most out of every hour of every working day! Why not help banish worker fatigue with abundant drinking water sanitarily provided by Halsey Taylor Coolers and Drinking Fountains? Write for latest catalog.

THE HALSEY W. TAYLOR CO., Warren, Ohio



HALSEY TAYLOR
FOUNTAINS AND COOLERS



F-6

(Continued from page 206)

steel, rounds for wire products, and many other items, all of which fit the requirements of New England industry. He added, moreover, that during the year there would be tested a new mold which will make it possible to produce a casting with a cross section of 100 square inches, suitable for rolling into 26 inch strip in a continuous sheet rolling mill. This mold will also be constructed so that it can be enlarged even further. In advising New England industry to consider continuous casting, Mr. Harter also said, "It is our belief that during 1952 continuous casting will have proved itself in production as a low-capital and high-yield method of making steel warranting its further and general extension in the steel industry."

1 1 1
**HUGE BELT FOR HANDLING ORE
FROM SHIP TO SHORE**

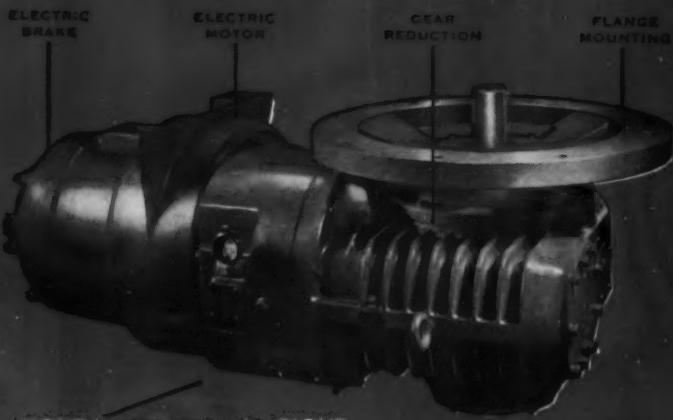


The largest conveyor belt ever built and shipped in a single roll is shown in the accompanying illustration made after work on it was completed in the new belt plant of the B. F. Goodrich Co., Akron, Ohio. The roll of belting is 15 feet high, 48 inches wide, and weighs 45,000 pounds. Designed for the B. & O. R. R., the belt will bring ore from ship to shore at the railroad's new dock in Baltimore.

1 1 1
**MODERN REFRACTORY PRACTICE
THIRD EDITION**

Modern Refractory Practice (Third Edition) 440 pages, characterized as being the most complete and useful work ever published on industrial refractories and their applications, is announced by the Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa. The publication is a practical engineering handbook, a comprehensive technical treatise, and a catalog of the company's products. Scale drawings of 20 types of furnaces, illustrating up-to-date industrial practice, constitute one of the most important features of the volume. A chapter is devoted to suggestions of a practical nature regarding the selection, care and use of refractories. The book is offered without charge to users of refractories.

(Please turn to page 212)



You can't beat the combination of the **RIGHT** horsepower, the **RIGHT** shaft speed, the **RIGHT** features all in one compact unit that you can use **RIGHT** where you want it. It's the best way and the easiest way to select your power drives because you purchase one unit, handle one unit in your receiving, production, or maintenance departments . . . set one unit in place and you're ready to go.

Master Motors, available in **it's so easy to do it** thousands and

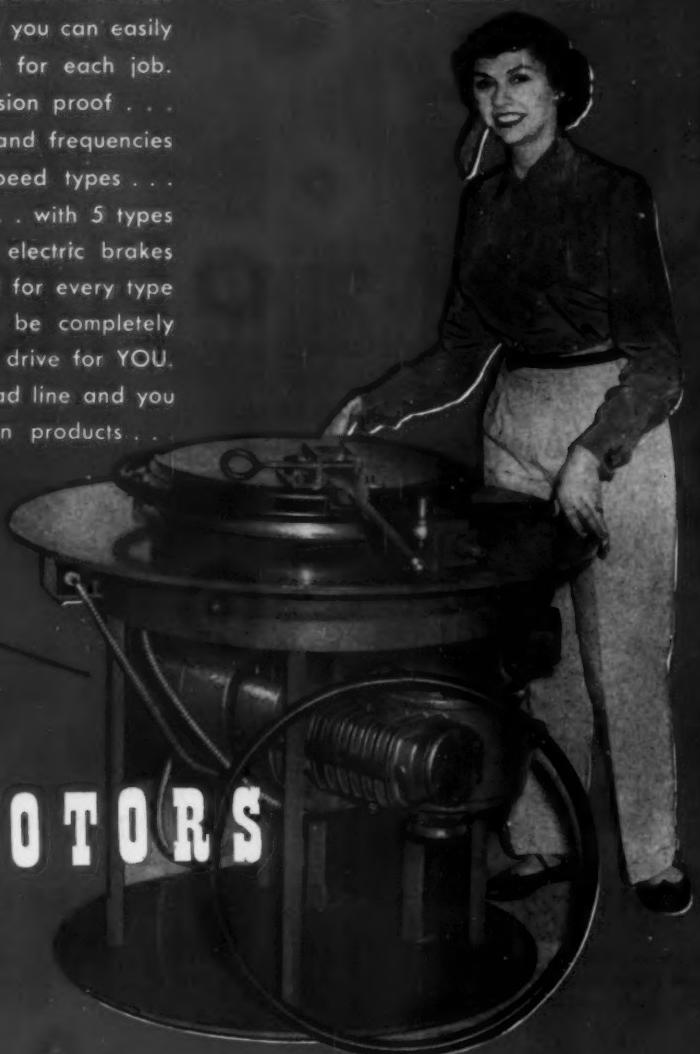
thousands of types and ratings (up to 150 HP) give you an enormous selection of integrally built power drives from which you can easily select the combination of features that's just right for each job.

Open, enclosed, splash proof, fan-cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 432 to 1 ratio . . . with electric brakes . . . with mechanical variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best motor drive for **YOU**.

Select the **RIGHT** power drive from Master's broad line and you can increase the saleability of your motor driven products . . . improve the economy and productivity of your plant equipment.

THE MASTER ELECTRIC COMPANY
DAYTON 1, OHIO

RIGHT



MASTER
GEARMOTORS



ASK US TO QUOTE ON Name Plates

Send us your designs and specifications. Or, if you wish, our Art Department is available to help in preparing distinctive name plates for your products. We will gladly quote on your requirements, without obligation. Etched or lithographed on metal, ECOA name plates are *permanent marks of distinction* which reflect quality and add sales appeal to your product. They look better—longer.

THIS BOOK CAN SAVE YOU MONEY

By choosing from nearly 5000 shapes and sizes for which we have dies on hand you can save the cost of special dies. Your design and engineering departments will get real money-saving ideas from this book. Write for your copy now on your letterhead.



ETCHING COMPANY OF AMERICA

1520 Montana St., Chicago 14, Ill., Dept. C-12

Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Art Novelties, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Lithographed or Screened Plastic Name Plates or Dials.

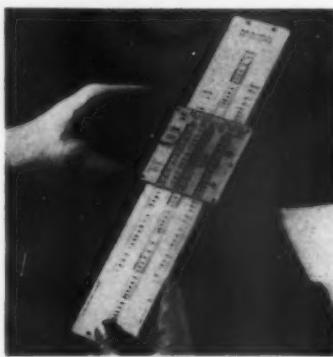
NEW UREA FORMALDEHYDE RESIN FOR BAKING ENAMELS

A new urea formaldehyde resin, designated as Uformite F-210, has been developed by the Resinous Products Division of Rohm & Haas Co., 224 W. Washington Sq., Philadelphia, Pa., to provide the high viscosity and wide range of compatibilities required for many industrial baking enamels. In addition, this resin reportedly contributes excellent gloss and fast curing speed. Compatible with many types of alkyd resins, Uformite F-210 is related to Uformite F-200E. It retains a relatively high viscosity when diluted, thus making possible economical coatings of low solids content. The resin tolerates large quantities of mineral thinner.

It is said to produce excellent adhesion in one-coat enamels, even when large concentrations of non-oxidizing alkyds are present. Uformite F-210 can be used with conventional aromatic and aliphatic solvents such as toluol, xylol, and mineral spirits, and has a very high tolerance for butyl alcohol, ketones and esters.

1 1 1

METAL ROD AND FLAT STOCK CALCULATOR



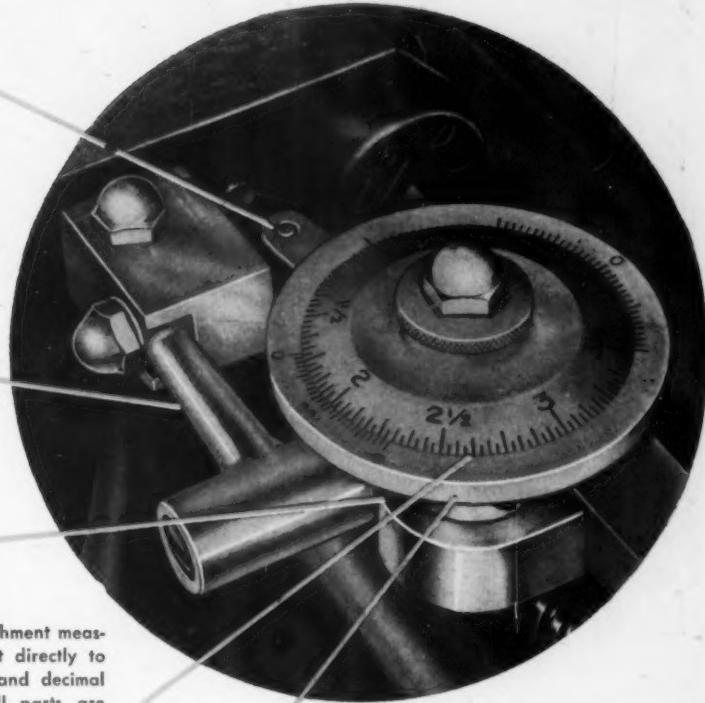
The accompanying picture shows metal rod and flat stock requirements calculator made of Vinylite plastic rigid sheet by H. R. Potter Co., Montclair, N. J., which makes it possible to determine requirements directly from blueprints. The 2 x 11" device computes information needed for rod and flat stock in various shapes and sizes and in any length. With a single setting, rod stock diameters $\frac{1}{8}$ to 3 inches made of bronze, brass, steel and aluminum in square, hexagonal and round shapes can be calculated. Larger diameters are determined by multiplication. Copper, brass, steel and aluminum flat stock, .003 to 3 inches thick in any length or width are also provided for. The slide is set with the correct rod size or flat stock thickness on a line with the type and shape of metal being figured. Pounds of stock required per thousand pieces for the length of piece needed may then be read directly from the rule. Eliminating the need for charts and reference, the calculator is especially handy for production men, purchasing agents, engineers and estimators.

(Please turn to page 214)



FORGINGS vs. CASTINGS?

Sorry, it wasn't even a contest!



The Weldon Lathe Attachment measures carriage movement directly to .001". Both fractional and decimal dials are available. All parts are chromium plated.



Anaconda Die Pressed forgings illustrated are full-size and unretouched. On the spindle housing, right, machining costs were reduced 70%; on the dial, next above, 40%.

In the first place, they shouldn't be in the same ring together, because Anaconda Die Pressed Brass Forgings have almost twice the strength of ordinary brass sand castings.

The Weldon Tool Co. of Cleveland, makers of the Weldon Direct Reading Measuring Attachment for lathes, switched from sand castings to forgings and found the extra strength a big sales advantage.

They also found a lot of other things: Solid, dense-grained, readily machinable metal; die-like dimensional accuracy; a surface smoothness that cut finishing and plating costs to the bone. And . . . an overall saving of 30%!

Publication B-9 will get you off to a good start. Write for it now. Address The American Brass Company, General Offices, Waterbury 20, Connecticut. In Canada: New Toronto, Ontario.

50101

You can depend on twice-wrought

ANACONDA
DIE PRESSED FORGINGS



Your *EXTRA* Advantages in specifying CLEVELAND Fasteners:

Extra high manufacturing standards,

Extra wide range of sizes,

Extra fast delivery

... advantages that spring from

CLEVELAND'S SPECIALIZATION in Cap Screws* Set Screws, Milled Studs

*Cap Screws in Hex, Fillister, Flat and Socket Heads

Also special headed and threaded parts, your design.

Write for latest catalog

THE CLEVELAND CAP SCREW COMPANY
2917 EAST 79TH STREET • CLEVELAND 4, OHIO

Warehouses: Chicago, New York, Philadelphia, Providence

CLEVELAND
Top Quality
FASTENERS

ORIGINATORS OF THE
KAUFMAN DOUBLE EXTRUSION PROCESS

Specialists for more than 30 years in
CAP SCREWS, SET SCREWS, MILLED STUDS
Ask your jobber for Cleveland Fasteners

PLASTIC PULLEY CUTS COST OF DRILL PRESS

Use of plastic pulleys, molded from macerated, fabric-base Synthane, has reduced by two-thirds the cost of pulleys in the manufacture of precision drilling machines at the High Speed Hammer Company, Inc., Rochester, N. Y. Most of the saving reflects a reduction in machining costs. Only two machining operations, in the manufacturer's plant, now produce a finished pulley; the cast aluminum pulleys formerly used required seven.

The manufacturer attributes these savings partly to the ease with which the plastic may be machined, and partly to the form in which the pulley blanks are furnished by Synthane Corporation of Oaks, Pa., manufacturer and fabricator of laminated and molded plastics. The



The four grooves are cut simultaneously

machinability of the material, for example, allowed the drill press manufacturer to design an ingenious tool with four cutting edges, all permanently secured to cut four pulley grooves simultaneously and with a single setting.

This tool produces grooves with diameters of $1\frac{1}{8}$, $2\frac{3}{4}$, $4\frac{3}{16}$ and $5\frac{7}{16}$ inches on the spindle pulley, and $2\frac{3}{8}$, $3\frac{23}{32}$, $5\frac{3}{32}$ and 6 inches on the motor pulley. Before the pulleys are shipped to the Rochester firm, the hubs are drilled and tapped to take $\frac{1}{4}$ -in. set screws and the blanks are lathe-finished all over. Molded spindle holes of $\frac{1}{2}$ -in. diameter are reamed by the Rochester manufacturer to a tolerance of plus .0005 in. and minus .0000 in.

By adapting its machining set-up to the properties of the plastic material, the High Speed Hammer Company is demonstrating that the application of new materials and methods can often produce substantial savings with no compromise in product performance.

↑ ↑ ↑

SYNTHETIC LUMBER MADE OF PRESSED SAWDUST AND SHAVINGS

Low cost, high quality synthetic lumber made of pressed sawdust and wood shavings, bonded with synthetic resin may be produced from logs or wood which the lumber operator now considers to be either decidedly inferior or unusable, according to Robert A. Caughey, research director of Southington Mills, Wilton,

(Please turn to page 216)



Conserve that Stainless!

IF you possess any stainless steel of doubtful parentage, now is the time to identify it. Most stainless alloying elements are scarce—some have reached the critical stage.

Any mixed supplies of stainless steels you have in stock have become precious, and well worth sorting out.

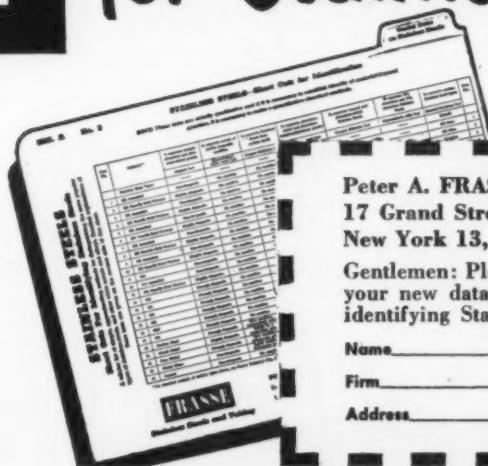
To help you, Frasse engineering service has recently revised and reissued our Data Chart, Sec. A No. 3—which describes 10 simple methods for separating stainless from carbon and alloy steels, nickel stainless from moly grades, straight chrome from chrome nickel grades, etc. A detailed expla-

nation of each testing method is also included. The chart is printed on durable cardboard stock, regular file card size, and can be filed, tacked on a wall, or slipped under glass for speedy reference.

A copy of this useful chart may be obtained by using the coupon below. Mail it today! **Peter A. FRASSE and Co., Inc., 17 Grand St., New York 13, N. Y. (Walker 5-2200)** • **3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900)** • **50 Exchange St., Buffalo 3, N. Y. (Washington 2000)** • **157 Richmond Ave., Syracuse 4, N. Y. (Syracuse 3-4123)** • **Jersey City • Hartford • Rochester • Baltimore**

FRASSE for Stainless Steels

- Bars
- Sheets
- Strip
- Plates
- Angles
- Wire
- Tubing
- Pipe
- Fittings



**Peter A. FRASSE and Co., Inc.
17 Grand Street
New York 13, N. Y.**

25A

Gentlemen: Please send me, without obligation, a copy of your new data chart, Sec. A No. 3—listing methods for identifying Stainless Steels.

Name _____ Title _____

Firm _____

Address _____

10,532 PRESIDENTS* ARE RIGHT!

TOWMOTOR increases profits

Presidents of 10,532 plants and warehouses, in every type of industry, have seen profits rise with Towmotor Mass Handling. Production man-hours are saved, payroll costs are cut from 25% to 60% as Towmotor moves tons of goods in minutes instead of hours. Twelve special attachments simplify difficult handling jobs. Find out how modern plants increase profits with Towmotor Mass Handling. Write today for "Handling Materials Illustrated." Towmotor Corporation, Div. 11, 1226 E. 152nd St., Cleveland 10, Ohio, U.S.A.



* Towmotors increase profits everyday for 10,532 modern American industries.

Mass Handling is the answer!

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

SMALL PARTS
Cost less when made by
MULTI-SWAGE
The economy way to get
a million small parts
similar to these —

Examine the tubular metal parts shown here twice size. If you use anything similar . . . in large quantities . . . important savings can be yours. Send us the part and specs. Our quotation will show why the Bead Chain Company's MULTI-SWAGE Process has long been known as the most economical method of making electronic tube contact pins, terminals, jacks and sleeves. And, why more and more users of mechanical parts (up to $\frac{1}{4}$ " dia. and to 2" length) employ our facilities. WRITE for Data Bulletin.

B THE BEAD CHAIN MANUFACTURING CO.,
Tr. Mark 88 MOUNTAIN GROVE ST., BRIDGEPORT 5, CONN.

(Continued from page 214)

N. Y. There is little doubt, he said, that a synthetic board can be made for most of the applications where wood is now used, often doing a better job than lumber is now doing. With a reasonable volume of production, the number of board feet of the synthetic boards produced per man day will be much higher than the ordinary lumber. Mr. Caughey said that in producing lumber for building purposes, furniture, etc., less than 30% of the wood in the log reaches the ultimate consumer, and of this 30% a considerable portion is of inferior quality.

Practically all of this waste, he declared, could be utilized in the manufacture of synthetic lumber, and the yield in terms of pounds of finished product per pound of raw material may be close to 100%. Mr. Caughey called the synthetic lumber an "ideal board having great nail holding power and strength. "Sawdust" boards, he said, produce a structure with greater rigidity than lumber. At the present time two types of synthetic board are in successful commercial production, at a rate of several million feet per year in one small plant alone.

HEAT TREATMENT AND PROPERTIES OF IRON AND STEEL

Heat Treatment and Properties of Iron and Steel, a new circular just released by the National Bureau of Standards, presents basic theoretical and practical principles involved in the heat treatment of ferrous metals. This circular, which is now available from the Government Printing Office, has been prepared in simplified form principally to give an understanding of heat treatment to those unacquainted with the subject.

The effects of various treatments on the structural and mechanical properties of iron and steel are thoroughly discussed although many theoretical aspects and technical details have been omitted for the sake of simplicity. Subjects presented include properties of iron, alloys of iron and carbon, decomposition of austenite, heat treatment of steels, hardenability, heat treatment of cast iron, nomenclature of steels, recommended heat treatments, and properties and uses of steels. A list of selected references is also given, and a large number of graphs, tables, and photographs illustrate the text.

Circular 495, *Heat Treatment and Properties of Iron and Steel*, by Samuel J. Rosenberg and Thomas G. Digges, 33 pages, 25 cents a copy, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Remittances from foreign countries should be in United States exchange and should include an additional sum of one third the publication price to cover mailing costs.

(Please turn to page 218)



**PLANT
FOR SALE**
Chicago Industrial Area

Having moved into our newly-acquired plant in York, Pa., we vacate one of our midwest plants located in Chicago Heights. 115,000 sq. ft. area — plus several acres for expansion. Unexcelled rail and highway facilities. In Chicago switching district. Write L. J. Conger at General Offices and Main Plant, Aurora, Ill.

LYON

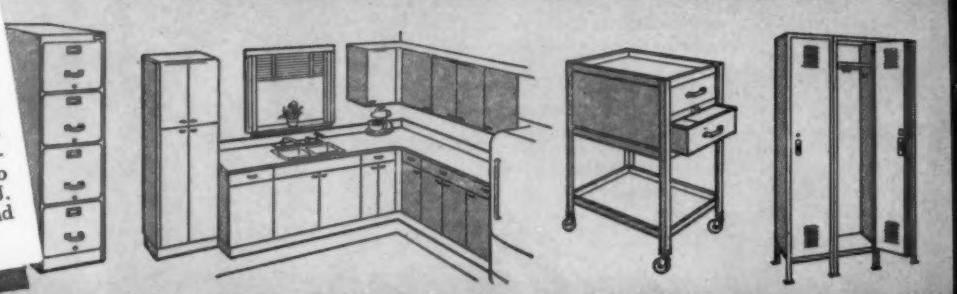
STEEL
EQUIPMENT
FOR

**Factories
Shops
Warehouses
Stores
Offices
Institutions
Homes**

**SOLD
FROM COAST
TO COAST**

LYON METAL PRODUCTS, INCORPORATED

General Offices: 1233 Monroe Avenue, Aurora, Illinois
Factories: AURORA, ILLINOIS • YORK, PENNSYLVANIA
Sold Nationally through Factory Branches and Dealers



A PARTIAL LIST OF LYON PRODUCTS

- Shelving
- Kitchen Cabinets
- Conveyors
- Economy Locker Racks
- Lockers
- Cabinet Benches
- Bar Racks
- Flat Drawer Files
- Stools
- Storage Cabinets
- Tool Boxes
- Revolving Bins
- Bin Units
- Welding Benches
- Parts Cases
- Wood Working Benches
- Display Equipment
- Drawing Tables
- Revolving Bins
- Hanging Cabinets
- Filing Cabinets
- Folding Chairs
- Work Benches
- Bench Drawers
- Service Carts
- Sorting Files
- Drawer Units
- Hopper Bins
- Tool Stands
- Shop Boxes
- Tool Trays
- Shop Desks

You know how to operate
this extinguisher
JUST BY LOOKING AT IT!



It's a Randolph!

The first 10 to 30 seconds can mean the difference between no loss and complete destruction when fire starts. That's why Randolph's simple, obvious operation is so important in stopping fires before they spread!

Anybody can get a Randolph into action FAST! No valves to turn, no nozzles to adjust; just point and press your thumb! Randolph's snowy CO₂ is non-damaging, evaporates without a trace. It's non-toxic, won't conduct electricity, deteriorate or freeze. Underwriters' Approved.

A COMPLETE LINE OF CARBON DIOXIDE EXTINGUISHERS AND AUTOMATIC SYSTEMS

Learn how Randolph gives your plant better preventive fire protection! Write Randolph Laboratories, Inc., 1 East Kinzie St., Chicago 11, Illinois.

Randolph
SIMPLIFIED FIRE EQUIPMENT



CONVEYOR REMOVES MACHINE TOOL CHIPS AND TURNINGS

A new conveyor unit which continuously removes metal chips, borings, or turnings from operating automatic or multiple spindle production machines, known as the "Chip Tote," is announced by May-Fran Engineering, Inc., 1721 Clarkstone Road, Cleveland 12, Ohio. The units incorporate a hinged steel conveyor belting and will handle hot, heavy, and wet or dry chips and turnings from production machines of all standard makes. Different models of the conveyor will be made available to meet height and width requirements of all metal-removing machine tools.



Wiper blades spaced at intervals on belting prevent jamming

In operation, chips are funneled into a conveyor belt by means of a steel hopper, carried horizontally until clear of the machine's operating mechanism and then transported up incline of conveyor for discharge into tote boxes or onto a carry-off conveyor system. The design of the special belt prevents fall-through and does not remove coolant. Perforated steel links can be supplied for application in which complete drainage of chips is required.

NEW "T" STEEL IS STRONG AND TOUGH

U. S. Steel's Carnegie-Illinois Steel Corporation announces the first of a new group of alloy steels to be known as T-steels. "Carilloy" T1 is a multiple-alloy plate steel, which combines extremely high strength with excellent ductility and toughness, even at sub-zero temperatures.

With almost double the strength of high-strength, low-alloy steels and almost triple that of ordinary welding grade structural steels, "Carilloy" T1 promises to effect considerable savings in applications calling for heavy steel members of $\frac{1}{2}$ inch thickness and up. It is designed to be at least two to three times as resistant to atmospheric corrosion as plain carbon steels.

This plate steel is furnished heat treated to a minimum yield strength of 100,000 psi. It maintains adequate toughness

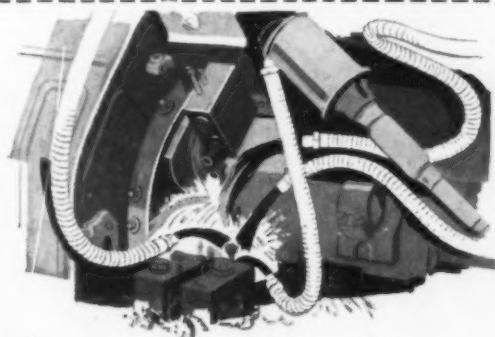
(Please turn to page 220)

Variety



Bakers' baby

Believe it or not, this machine forms rolls out of dough. Yep, it's a Readco Vacuum Roll Divider and Rounder. In goes the dough—out come the rolls, ready to bake. American Seamless Flexible Bronze Tubing carries the vacuum—which shows that this famous tubing is equally good for carrying "nothing."



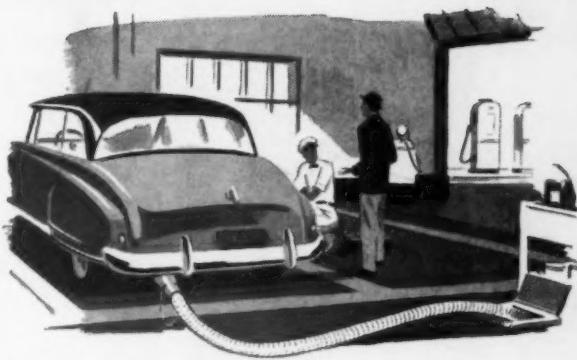
Metal-working robot

With uncanny precision and "intelligence" this automatic lathe installed at The Black & Decker Mfg. Co. puts the bite on metal rod while this American Flexible Coolant Line carries oil to the tool edge. To remove damaging particles of metals, the cutting oils and coolants are clarified by a DeLaval Purifier.

THREE'S a type of American Flexible Metal Hose or Tubing for conveying liquids, many chemicals, gases and semisolids under severe conditions of temperature, pressure and frequent movement... for protecting wiring and flexible drive shafts... for absorbing vibration... for connecting misaligned piping and ports. Let us tell you about them in full detail. The American Brass Company, American Metal Hose Branch, Waterbury 20, Connecticut. In Canada: The Canadian Fairbanks-Morse Co., Ltd.

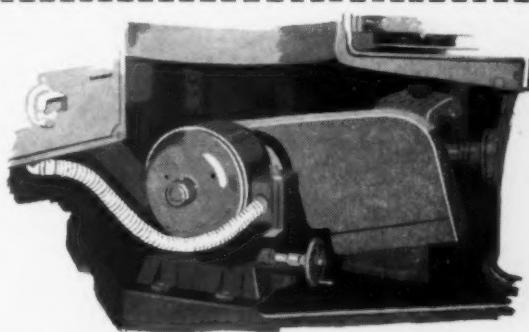
50249

is the spice of an American flexible connector's life!



Deadly "CO" has to go

Yes, deadly carbon monoxide is carried off safely by this "Monoxivent" exhaust system, built by the Kent-Moore Organization, Inc. American VAC Type Flexible Stainless Steel Tubing, dependably tight and resistant to rust, heat and corrosion, handily connects the car exhaust to the underfloor duct.



This machine can can

Anyway, it can can as long as the motor can. In use at The California Packing Corporation, it's a disc feeder which automatically feeds cans into a fruit canning production line. The motor feed wires are safely tucked away in American Sealtite* Conduit which protects the wires while providing flexibility for belt take-up.

*Trade Mark

wherever connectors must move



American

FLEXIBLE METAL HOSE AND TUBING

CAN YOU GUESS THE ANSWERS?

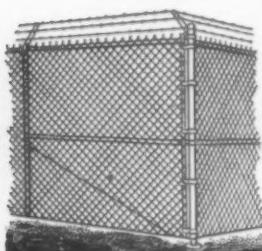
WHAT IS A TIMBER CRUISER?

IN THE LANGUAGE OF THE LUMBER CAMP, A "CRUISER" IS A TIMBER ESTIMATOR. LUMBERING IS ONE OF THE MANY IMPORTANT INDUSTRIES THAT USE QUANTITIES OF GOOD WIRE ROPE, MADE BY ACCO'S AMERICAN CABLE AND HAZARD DIVISIONS.

WHICH WOULD WIN A FIGHT?

ACCORDING TO RECORDS OF THE ROMAN ARENA, THE TIGER WOULD USUALLY BE VICTORIOUS. HOWEVER, EITHER OR BOTH WOULD BE STOPPED BY A CHAIN LINK FENCE —

MADE BY
ACCO'S
PAGE STEEL
AND WIRE
DIVISION.



American Chain & Cable (ACCO) makes many products—for Industry, Agriculture, Transportation and the Home

WEED Tire Chains

PAGE Chain Link Fence,
Wire and Welding Rods

WRIGHT and FORD Hoists

TRU-LAY and LAY-SET
Preformed Wire Rope

CAMPBELL Abrasive Cutters

"ROCKWELL" Hardness Testers

READING Steel Castings

AMERICAN Chain

ACCO

Information on any ACCO product gladly sent on request

PENNSYLVANIA Lawn Mowers

READING-PRATT & CADY
Valves and Fittings

HELICOID Pressure Gages

TRU-LAY Cable and TRU-LOC
Swaged Terminals for Aircraft

TRU-STOP Emergency Brakes

MANLEY Automotive Equipment

MARYLAND Bolts and Nuts

OWEN Silent Springs

(Continued from page 218)

even at this high level of strength and is suitable for application where extreme high strength and good weldability are required.

It has been established definitely that welding does not adversely affect the properties of this steel, which has been designed to require no special preheating or postheating treatments in welding or gas-cutting operations beyond those normally used with ordinary structural steels. If low-hydrogen type electrodes are used, "Carilloy" T1 is not susceptible to under-bead cracking. Electrodes that will develop the full strength of the T1 basic metal are available and should be used if 100 per cent joint efficiency is needed.

No special equipment and procedures are required for fabrication. Bending or forming may be accomplished cold if sufficient power is available to overcome the high yield strength of "Carilloy" T1. If hot forming is necessary, the operation must be followed by heat treatment which involves liquid quenching and tempering after the hot forming operation. Corporation metallurgists will give the user the necessary heat treatment information for this work.

The unique properties of this new steel are obtained by blending multiple alloying elements, coupled with precision heat treatment. Carbon content is restricted to 0.18 maximum to promote ease of welding and gas cutting.

AUTOMATIC SWITCH PREVENTS FIRES IN HIGHWAY ACCIDENTS



Safety switch which cuts off ignition current the instant a vehicle tips to a 45 degree angle, approved and listed by Underwriters' Laboratories, Inc., is being marketed by the Clapp Company, Dallas, Texas. It consists of a cylinder about one inch in diameter and 2 1/8 inches high molded of transparent Plexiglas, which is highly shatter resistant, and which remains unclouded in the presence of gasoline and oil fumes, is unaffected by under-hood heat, and does not become brittle with age. Installation is simple. The switch is mounted vertically under the hood, usually on the front face of the fire wall, so that when a vehicle is tilted to 45 degrees, the mercury flows away from one terminal, breaking the ignition circuit.

(Please turn to page 222)

TUNE IN "SUSPENSE!"
CBS RADIO NETWORK THURSDAY
CBS TELEVISION TUESDAYS



AUTO-LITE

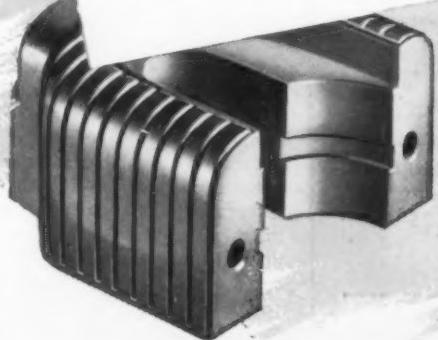
DIE CASTINGS

• Increased production facilities for die castings made possible through the famous Auto-Lite "controlled metals" processes are now available. The opening of the great new Lockland plant of Auto-Lite, combined with the enlarged facilities at Woodstock, Illinois, greatly increases Auto-Lite's ability to furnish high quality die castings.



THE ELECTRIC AUTO-LITE COMPANY
Die Casting Division, Woodstock, Illinois
600 S. Michigan Ave. Chicago 5, Illinois

723 New Center Bldg.
Detroit 2, Michigan



Inquiries invited

Catalog will be sent on request.
Write on your company letterhead.

Why **REFRIGERATED AGING**
 makes a *Better* Liquid Hand Soap

GERSON-STEWART'S

Liquid Hand Soap

The newest achievement in soap-making now gives Gerson-Stewart's Liquid Hand Soap even better quality than ever! Carefully controlled refrigeration during the aging and filtering processes eliminates the last traces of impurities and sediment, as well as the stearates which cause clouding. This new process, coupled

with the absolutely pure ingredients and strict laboratory control of every batch, assures a liquid hand soap which lathers readily, is mild and gentle to the skin, and cannot clog or block the lines of the modern gravity soap system. With Gerson-Stewart's Liquid Hand Soap, you can supply the finest soap on the market today, at a low, economical cost.



The GERSON-STEWART Corp.
 LISBON ROAD • CLEVELAND, OHIO

NAMEPLATES

any design • any quantity • precise figures



Whatever type, size, or quantity of nameplate you desire, take advantage of our long experience and new facilities.

We can supply etched or lithographed nameplates to your specifications, in aluminum, copper, steel, stainless steel—finished in lacquer, nickel, chromium, or silver. In addition to nameplates with all the customary kinds of black or colored markings, we can supply self-luminous, fluorescent, or phosphorescent nameplates.

This company has been making instrument and timepiece dials for many years and applies its characteristic care to nameplate manufacture as well. We are equipped to produce either large-quantity runs of ordinary nameplates or small runs of special, high-accuracy scientific nameplates.

Get our quotation on your present nameplate. Possibly we can improve its design and save you money! Write Department 901, United States Radium Corporation, 535 Pearl Street, New York 7, N.Y.

NEW PROCESS PREPARES ALUMINUM FOR PAINT FINISHES

A patented process for the protection of aluminum which has been in use by the Pyrene Manufacturing Company in both Great Britain and America for a number of years is now being offered to industry.

This Pylumin Process, as it is called, accomplishes two things. It gives an attractive coating definite corrosion-resistance value if no paint finish is applied. In addition it provides an adhesive and efficient base for paint finishes.

It is claimed that Pylumin is simple to operate since it is an immersion process and employs a single powder whose ingredients have been proportioned and pre-mixed.

The costs of installation and operation are also low. Ordinary heated steel tanks are all that is required. Unless there is an exceptional amount of grease and dirt on the parts to be processed, no special cleansing is required in advance for the cleaning and processing can be done in one operation.

The process is adaptable to either large or small scale production and it can be used on widely varying products made of aluminum and aluminum alloy. There being no dimensional changes, it is not necessary to make allowances for close tolerances.

The process does not require a license but simply the purchase of the Pylumin chemicals and test kit supplied with full instructions for installation and operation from the Pyrene Manufacturing Company, Metal Finishing Division, 10 Empire Street, Newark 5, New Jersey.

1 1 1

"SMALL" SUPPLIERS MAKE UP 70% OF B. F. GOODRICH SOURCES

Approximately 70 per cent of the more than 2000 companies supplying The B. F. Goodrich Company with goods and services during 1949 are so-called "small" businesses, according to a survey recently completed by the company.

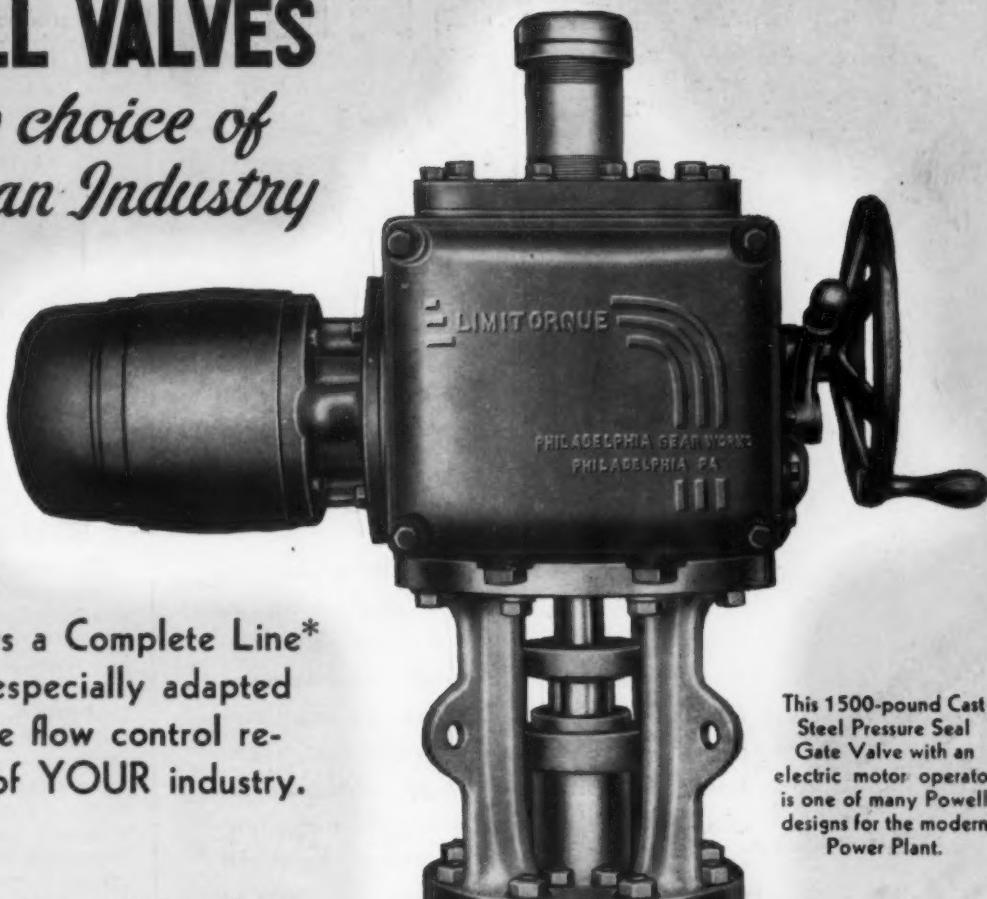
Determining the suppliers that were classified as "small" B. F. Goodrich used for measurement annual sales of less than \$5,000,000, or those companies having fewer than 500 employees. The survey showed that some suppliers are merchants with few employees but with relatively large annual sales volumes. More than 70 per cent of the company's suppliers in 1949 were manufacturers.

In addition to suppliers, 46,000 dealers, retailers and distributors of tires, auto accessories, industrial rubber products, footwear, soles and heels, surgical, druggist and household supplies, plastics, chemicals and aeronautical products, all "small" by accepted standards, are associated with B. F. Goodrich making up an integrated business in which each segment is dependent in varying degrees upon the performance and progress of the others.

(Please turn to page 224)

POWELL VALVES

*the top choice of
American Industry*

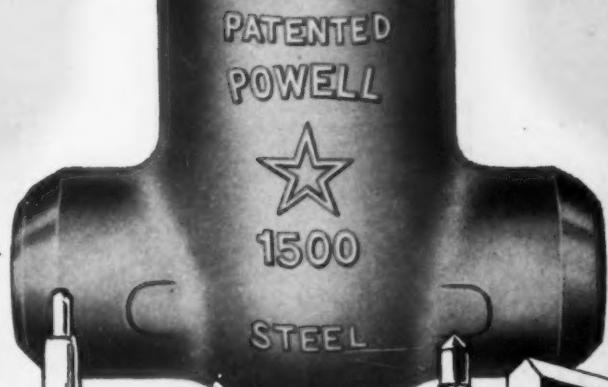


Powell Makes a Complete Line*
of Valves especially adapted
to meet the flow control re-
quirements of YOUR industry.

This 1500-pound Cast
Steel Pressure Seal
Gate Valve with an
electric motor operator
is one of many Powell
designs for the modern
Power Plant.

*The Complete Line includes valves
in Bronze, Iron, Steel and the
widest selection of Corrosion-
Resisting metals and alloys ever
made available to Industry.

*Quality fine
throughout
"The Line"*



POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

HOLTITE

Industry's Dependable Source For Every Type Of Fastening

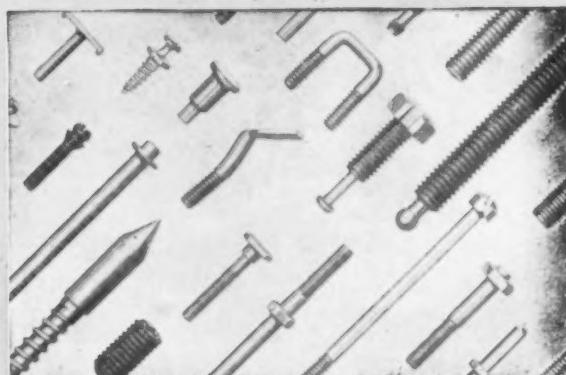
However complex or simple your fastening requirements may be, they can be met by the comprehensive range of standard or special HOLTITE items produced by the Continental Screw Company.

For over 46 years this progressive plant has kept step with the advance of American industry—meeting its current needs as well as anticipating its future requirements. In the extensive HOLTITE plant skilled engineering talent supplements completely modern equipment, Chemical and Metallurgical Research Laboratories, and every modern scientific inspection and testing device. In short, we are equipped with the most capable men, methods and machinery to provide a dependable source for every type of modern fastening. Specify HOLTITE for efficient, economical application in every assembly.

SPECIALS

Frequently, a special fastening or part designed for a particular purpose will replace several standard fastenings or parts and effect definite savings in labor and material costs.

We have complete facilities for producing specials exact to your specifications, blue prints or samples.



CONTINENTAL
SCREW CO. New Bedford,
Mass., U.S.A.



DISPLAY SHIPPING CONTAINER WELL RECEIVED

A good example of improved packaging which at no extra cost makes for streamlined merchandising and paves the way for increased volume of sales, is the illustrated container manufactured by the Gaylord Container Corporation of St. Louis for the Air Light Products Company of Omaha.



The new method offers several advantages over the old. The assortment of plastic fisherman's floats was formerly packed in cartons holding one dozen of one type. This made it difficult for the jobber to sort the items to send them to retailers. With the new packaging this sorting is eliminated. Salesmen more easily sell one complete unit consisting of 132 assorted floats to the retailer, rather than a few of two or three varieties. The container, which is made of 200 lb. test corrugated board with blue liner, and printed in red and black, makes a colorful counter-display. For shipment it is protected by corrugated kraft sleeve.

NEW POWER UNITS FOR STUD WELDING EQUIPMENT

Development of two special power units designed for use with Nelson stud welding equipment, is announced by the Morton Gregory Corporation, Lorain, Ohio. One unit is a motor-operated generator set capable of welding studs up to and including $\frac{5}{8}$ " in diameter. The other is a specially designed battery-operated unit which can be used for installing studs up to $\frac{1}{2}$ " in diameter with the automatic stud welding gun. The latter presents an excellent source of reliable power for stud welding wherever the voltages required for the operation of generators is not available.

The power unit is equivalent to two conventional 400-ampere generators in parallel, and is comparable in size to a 200-amp. welding generator. Either 220-volt or 440-volt, 60-cycle alternating current can be used with the power unit. It weighs approximately 800 pounds.

The stud welding battery unit, requiring only a 110-volt a-c convenience outlet for its operation, is particularly useful where welding generators of necessary power are not available, and for plant maintenance operations. It is mounted on strong frame. Wheels are optional. It has automatic battery charging device mounted on top of hood. The unit weighs approximately 1,100 pounds.

You can't beat this life!

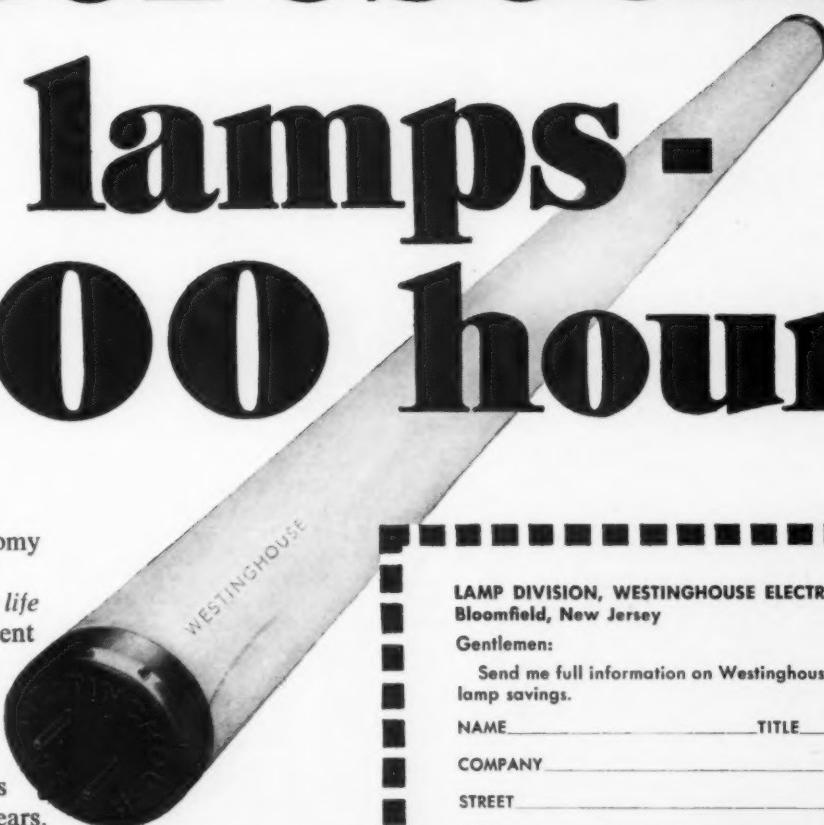
Life of Westinghouse fluorescent lamps - **7500 hours**

* You'll get lighting economy at no extra cost!

Yes, the *rated average life* of Westinghouse fluorescent lamps is 7500 hours.

That means that in store installations the life is $2\frac{1}{2}$ years; in one-shift factories and offices it's 3 years.

No other fluorescent lamp, similarly priced, can top this life.



LAMP DIVISION, WESTINGHOUSE ELECTRIC CORP.
Bloomfield, New Jersey

Gentlemen:

Send me full information on Westinghouse fluorescent lamp savings.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

P

PERSONALITIES

in the NEWS

Kenneth R. Geist has been named Director of Purchases for Allis-Chalmers Manufacturing Company, Milwaukee, Wis. He succeeds Fred E. Haker, who has retired after 50 years of service with



Kenneth R. Geist

the firm. Mr. Haker has agreed to remain until January 1 as a special representative reporting to the president.

Mr. Geist, who has served as assistant to the Director of Purchases for the past two years, joined Allis-Chalmers in 1936 as a summer employee. In 1946 he was transferred to the blower and condenser department and in the same year was named technical engineer-in-charge of the department's precision casting section. He is a graduate of St. Olaf College and received his master of science degree from the University of Minnesota.

Kenneth T. Gordon has been appointed Purchasing Agent of The Okonite Company, Passaic, N. J. He will also direct purchases for the company's Hazard Insulated Wire Works Division at Wilkes-Barre, Pa. and for the Okonite-Callender Cable Company of Paterson, N. J.

John L. Fabiny, previously in charge of metals and chemicals purchases, has been named Assistant Purchasing Agent.

A. J. DeCarlo has been appointed Manager of Purchasing and Materials of Carbonyl Company, Inc., Detroit, Mich. Mr. DeCarlo, who was formerly Purchasing Agent, in addition to directing purchases will have the duties of coor-

dination of and general supervision over inventory control, shipping, receiving, stores and process and finish stocks.

Mr. DeCarlo was recently elected president of the Purchasing Agents Association of Detroit for the 1950-51 term. He had previously served as treasurer and vice-president of the association.

Saul D. Lewis has been promoted to Purchasing Agent of Air King Products, Inc., Brooklyn, N. Y. He formerly was a buyer and assistant to the Vice President in Charge of Purchasing.

Robert K. Spofford has been named Director of Purchases for John A. Roebling's Sons Company, Trenton, N. J. For the past seven years Mr. Spofford



Robert K. Spofford

was associated with The Okonite Company. For five years he served as Purchasing Agent. Prior to that he was assistant to the Supervisor of Purchases for the Continental Can Company, Inc.

C. O. Richards has been appointed Purchasing Agent of Pennsylvania Pump and Compressor Company, Easton, Pa. Mr. Richards was formerly securities representative and resident manager for S. W. Straus & Co., New York, N. Y., and cost accountant, assistant purchasing agent, and purchasing agent for Taylor-Wharton Iron & Steel Co., Easton, Pa. He is a past president of the Purchasing Agents Association of the Lehigh Valley.

R. G. Burnham has been promoted to Director of Purchases for The Standard Products Company, Cleveland, O. He will coordinate purchases and purchasing policies of the company's six manufac-



R. G. Burnham

turing divisions, while actual purchasing will continue to be carried out at the various plants.

Mr. Burnham is a former Director of Purchases for The National Screw and Manufacturing Co., and later was Vice President of The American Rivet and Manufacturing Co., which he still serves as a member of the board of directors. He is a graduate of the University of Michigan.

Charles H. Cox, Jr., has been appointed Purchasing Agent of Synthane Corporation, Oaks, Pa. He succeeds Samuel M. Fox, who retired recently. Mr. Cox has been with Synthane for the past 16 years except for five years' service in the Army. He will continue to direct the laboratory program of quality control which he established, testing incoming raw materials and outgoing finished products as well. He is a member of the American Society for Quality Control.

Joseph E. Adams has been named Director of Purchasing and Planning for White Motor Company, Cleveland, O. The post, a new one, takes in full responsibility for purchasing, material control, planning and scheduling.

(Please turn to page 228)

What SUN has done for others...

MANUFACTURER OF
BUSINESS MACHINES COATS
FACTORY AIR SUPPLY FILTERS
WITH **SUNTAC**—IMPROVES
PURIFICATION BY 50%

STRATEGIC
MULTI-MILLION-DOLLAR
WIND TUNNEL DEPENDS
ON **SUNVIS** TO OIL-
CUSHION THE SENSITIVE
BALANCE SYSTEM
FOR MEASURING
STRESSES

SUN CUP
LC GREASE PROVES
EFFECTIVE IN MAST
AND HOUSING OF TV
AERIALS UNDER
ALL WEATHER
CONDITIONS AND
UNDER TEMPERATURES
FROM -20° TO +150°

SUNISO
IN THE COMPRESSOR
ASSURES ICE FOR MAJOR SPORTS ARENA
(ONE REFRIGERATION FAILURE
COULD COST THE RINK \$25,000)

RIVER TOWBOAT SWITCHES
FROM OIL TO **SUN**
ADHESIVE PRESSURE
GREASE FOR STERN-TUBE
BEARINGS. RESULTS: COMPLETE
SUCCESS, LONGER LIFE, BIG CUTS IN COSTS.

...SUN can do for you!



Unusual problems or run-of-the-mill—thoroughly "Job Proved" products are only half the story of their solution. The other half is correct application. That's why it will pay you to call in a Sun industrial representative. His broad experience can mean substantial savings in your operations. Just get in touch with the nearest Sun Office.

SUN OIL COMPANY • Philadelphia 3, Pa.

In Canada: Sun Oil Company, Ltd., Toronto and Montreal

Elmer P. Behrens has joined the purchasing department of The Brunswick-Balke-Collender Company, Chicago, Ill., according to an announcement by R. H. Bennett, Director of Purchases. He succeeds John W. Daly, who has resigned to become assistant to the president of Triem Steel & Processing, Inc.

F. R. Davis has been appointed Director of Purchases of Continental Steel Corporation, Kokomo, Ind. He succeeds G. L. Rathel, Vice President in Charge of Purchases, who will retire at the end of the year after 7 years of service with the corporation and its predecessor companies.



F. R. Davis

D. J. Pickett, formerly assistant credit manager for the company has been appointed as assistant to Mr. Davis. Mr. Davis and Mr. Pickett assumed their new duties on November 1, and will take over full responsibility at the first of the new year.

Mr. Davis has been connected with Continental and its former subsidiary company, Chapman Price Steel Company, Indianapolis, for 25 years. He entered the latter company in 1925 as a



D. J. Pickett

storekeeper. He moved to Kokomo in 1931 when he was appointed Assistant Purchasing Agent for Continental, a position he has held until the present time. Mr. Pickett joined the company in 1940 following his graduation from DePauw University.

E. C. Drew has been promoted to Purchasing Agent and H. J. Forth to assistant to the Purchasing Agent, Alkali Section, The Solvay Process Division, Allied Chemical & Dye Corporation, Syracuse, N. Y.

Mr. Drew, who was educated at Northeastern University and Massachusetts Institute of Technology, has been a member of the Solvay purchasing department since 1942. Previously he had purchasing and engineering experience with several construction firms in the Boston area. Mr. Forth, who studied at Syracuse University has been a member of the department for the past four years. He also worked for Carrier Corporation and in the purchasing department of General Electric Company.

William J. Borth has been assigned by Willys-Overland Motors, Inc., Toledo, O., to assist in the procurement of materials vital to the firm's civilian and defense production. He was formerly with General Electric Company, Schenectady, N. Y., where he had been a buyer in charge of sheet and strip steel purchases since 1945. From 1942 to 1945 he served as supervisor of that company's inventory control, and later as supervisor of vendor contract terminations. He joined General Electric as an accountant in 1936 following his graduation from the University of Kansas.

B. W. Lang, Purchasing Agent of AP Parts Corp., Toledo, O., has been named Vice President of the company. He is a past president of the Purchasing Agents Association of Toledo.

Roy Mills has been appointed Director of Purchases for General Fireproofing Company, Youngstown, O. Mr. Mills, for the past five years Purchasing Agent, succeeds the late George R. Farrell, Vice President in Charge of Purchases.

James A. Creswell has been appointed Purchasing Agent of Spruce Falls Power and Paper Co., Ltd., Toronto, Canada. He will also act as purchasing agent for Kimberly-Clark Corp. of Canada, Ltd.; LongLac Pulp and Paper Co., Ltd.; and Upper Canada Timber Co., Ltd. All purchasing will be conducted from the Spruce Falls office.

Sumner F. Goldthwaite has been appointed Assistant Purchasing Agent for the Merrimac Division of Monsanto Chemical Company, Boston, Mass. W. P. Sheppard Jr. is division Purchasing Agent. Mr. Goldthwaite has served as senior buyer for the Merrimac Division purchasing department since November, 1949. He joined the company in 1941.

H. W. Jarrell, Jr., a buyer in the purchasing department of Cities Service Refining Corp., Lake Charles, La., has been promoted to Assistant Purchasing Agent.

Harold J. Newton has been appointed Purchasing Agent for Wessendorff, Nelms & Company, Houston, Tex.

J. F. Stevens has been named to head the purchasing department of the Port Neches, Tex. rubber plant being reactivated by U. S. Rubber Company, which is operating the government-owned facility. Mr. Stevens was formerly with the Naugatuck Chemical Division of the company.

William T. Kelly, Jr., at one time General Purchasing Agent of American Brake Shoe Company, New York, N. Y., has been appointed President of the company's American Brakeblok Division. He will continue as president of the Kellogg Division, manufacturer of air compressors and paint spray equipment.



William T. Kelly

After becoming General Purchasing Agent in 1940, Mr. Kelly was successively Vice President and President of the Kellogg Division, Vice President and director of the Canadian Ramapo Division, President of Engineered Castings Division and Vice President of the Brake Shoe Company.

Austin C. Ross, at one time Assistant General Purchasing Agent of the Worthington Pump and Machinery Corporation, Harrison, N. J., has been elected a Vice President of the company. He will continue to serve in his present position, Manager of the Buffalo Works.

Harry J. Bauer has been elected a Vice President of Consolidated Edison Company of New York, Inc., New York,



Harry J. Bauer

N. Y., and will be in charge of Purchasing and Stores, Fuel and Commercial Buildings. He will retain his present post as President of the New York Steam Corporation, a subsidiary of Consolidated Edison.

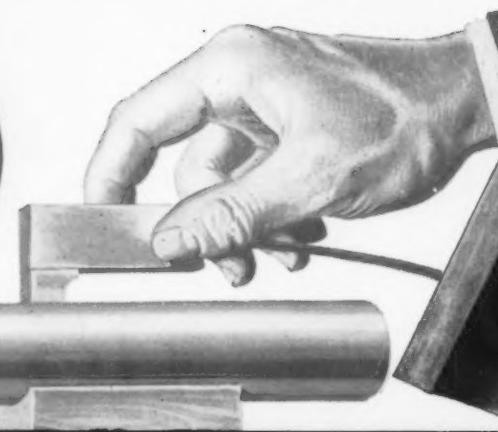
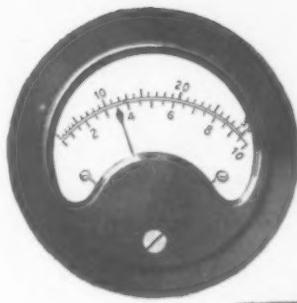
The departments reporting to Mr. Bauer formerly were under the direction of John H. Aiken. Mr. Aiken has taken over direction of the sales and commercial relations activities of Consolidated Edison.

Guerre Evans has been appointed Purchasing Agent of Engineering Supply Company, Dallas, Tex.

(Please turn to page 230)

ROCKRITE TUBING

Has High Surface Finish BEFORE MACHINING!



PROVED BY PROFILOMETER RATINGS AS LOW AS 5 MICROINCHES

You can trim machining costs of ring shaped and cylindrical parts with Rockrite Tubing because it reaches your plant with close tolerances and smooth surfaces. The reason? This tubing is sized by a distinctively different process:

- Dies compress the metal against a mandrel, tending to iron out small irregularities on both the inside and outside surfaces. The metal flows from high spots in the same manner as when it is forged.

- A certain amount of planishing action also takes place on the inside surface of the tube as it elongates under the pressure of the dies and creeps forward while in contact with the mandrel.

- In no part of this operation is there any action which can produce longitudinal scratches. The metal is not drawn through a die and over a mandrel.

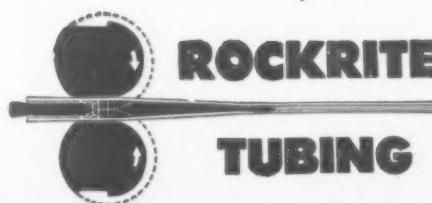
The proof of high surface finish? Profilometer readings recently taken on samples of Rockrite Tubing exhibiting superior finish show a range of RMS values of 5 to 55 microinches. In the manufacture of parts such as hydraulic cylinders this superior finish means substantial cost-savings well worth investigating.

HOW DO YOU SCORE? Do you know the three requirements essential for tube accuracy and lower-cost machined parts? New bulletin tells answers . . . gives more facts and figures on close-tolerance Rockrite Tubing. Send for your copy today.

ROCKRITE saves more than any other tubing

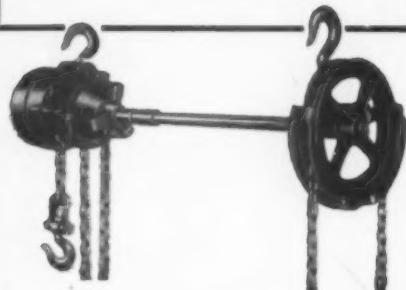
- Higher cutting speeds
- Tools last longer between grinds
- Work-surface finishes are better
- Machined parts have closer tolerances
- Stations on automatics are often released for additional operations
- Extra-long pieces available — less downtime for magazine stocking and fewer scrap ends
- Closer tolerances often eliminate necessity for machining on outside or inside

TR-118



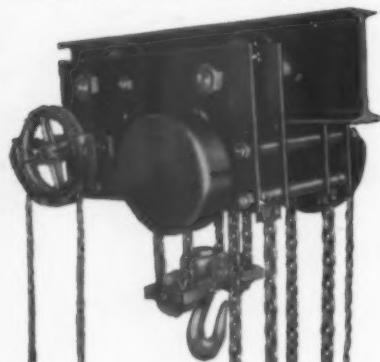
TUBE REDUCING CORPORATION • WALLINGTON, NEW JERSEY

FAST SERVICE on SPECIAL HOISTS



EXTENDED HANDWHEEL

Ideal for handling hot materials from a safe distance... for work where surface must be protected against scratching by the hand chain... for large flat or bulky loads. Sizes available: $\frac{1}{2}$ to 3 tons. Any standard Chester Spur-Geared Hoist can be readily converted to this type by adding the extended Hand Wheel device.



LOW HEADROOM

Designed for applications where headroom is so low that no other type of hoist can be used. Recommended for existing structures with low headroom—and for reducing costs of new construction by permitting lower ceilings. Sizes available: $1\frac{1}{2}$ to 24 tons.



CHESTER HOIST DIV.
LISBON, OHIO

P-6

V. J. Clarke, general manager of the commissary division of the Panama Railroad Co. in the Canal Zone, has been transferred to the New York, N. Y. office where he will be in charge of procurement of all supplies.

John J. Carson has been appointed Purchasing Agent for the Kaman Aircraft Corporation, Bradley Field, Hartford, Conn. He was formerly associated with Holo-Krome Screw Company and with the Eagle Lock Company as Purchasing Agent.

Richard C. Green has been named Purchasing Agent and Assistant to the Executive Vice President of the Missouri Public Service Company, Warrensburg, Mo.

Raymond A. Farough, formerly a senior buyer, has been promoted to Purchasing Agent on the central staff of Ford Motor Company, Dearborn, Mich. He replaces C. O. Slaght, who has been assigned to Ford's newly formed aircraft engine division in the manufacturing group. Mr. Farough, who joined Ford in 1923, will supervise the buying of textiles, plastics, glass, trim foundations, paints and paint components, oils, chemicals and rubber.

Jessie B. Morgan, Jr. has been named Purchasing Agent at Tulane University, New Orleans, La. Mr. Morgan, who was formerly internal auditor, succeeds Harold T. Porter, who resigned to accept a position in the purchasing section of Ethyl Corp., Baton Rouge, La.

H. W. (Bud) Loman, formerly Purchasing Agent for Pennsylvania State College, has been appointed Purchasing Agent for the University of Houston, Houston, Tex.

AMONG THE COMPANIES YOU BUY FROM

Richmond, Va.—National Electric Products Corp. Harold L. Rush has been named district sales manager in the Richmond territory. His office is at 100 W. Main Street.

Chicago, Ill.—Morse Chain Company, division of Borg-Warner Corporation. R. J. Howison, formerly general sales manager, has been named vice-president in charge of sales.

Indianapolis, Ind.—E. C. Atkins and Company. A. L. Martinson has been promoted to merchandise manager and general sales manager of the hardware division of the company.

Schenectady, N. Y.—General Electric Company. J. T. Farrell has been named assistant to the manager of sales of the company's Small and Medium Motor Divisions. Howard W. Bennett and Paul D. Ross have been named managers, respectively, of the new Gear-Motor and Packaged Drive Sales Division and another new group, the Erie (Pa.) D-C Armored Motor Sales Division.

Philadelphia, Pa.—The Market Forge Company, Materials Handling Division. A-1 Industrial Equipment Company, 812 N. Lawrence St., has been appointed distributor for eastern Pennsylvania and southern New Jersey.

Wadsworth, O.—The Ohio Injector Company. Five major sales divisions, each functioning under a field manager reporting to H. G. Smith, vice president in charge of sales, have been established.



W. G. Shepard

Divisions and managers are: New York, Daniel J. Mooney, Jr.; Atlantic, Paul E. Warner, Philadelphia; Central, W. G. Shepard, Wadsworth, O.; Mid-Continent, A. A. Kruse, Jr., Dallas; Pacific, Denny Gordon, San Francisco.

Passaic, N. J.—Raybestos-Manhattan, Inc., Manhattan Rubber Division. John T. M. Frey has been appointed assistant manager of the New York branch, and Lamar S. Hilton is now assistant sales manager of the abrasive wheel department.

Chicago, Ill.—Hanson-Van Winkle-Munning Company. Gerhard E. Versteegen has been appointed to the company's



G. E. Versteegen

staff of equipment sales engineers, with headquarters here. He will specialize on full and semi-automatic conveyors.

Chicago, Ill.—Gerrard Steel Strapping Company. Arthur W. Carlquist has been appointed general sales staff manager of this United States Steel subsidiary.

Cleveland, O.—American Steel & Wire Company. Charles H. Eisenhardt has been named manager of the electrical products sales division of this United States Steel subsidiary. He succeeds T. F. Peterson, resigned.

(Please turn to page 232)

BEARS FOR WEAR-MISERS FOR MAINTENANCE

QUAKER CONVEYOR BELTING ...for top-notch performance at rock-bottom cost

Here's one belt that is built for the toughest materials handling job. A Quaker Conveyor Belt lifted well over one million tons of rock during an eleven year period with minimum wear!

That's because Quaker Conveyor Belts are built to tough better . . . resist cuts, gouges, and the effects of acid materials and mildew . . . withstand the shocks of loading. These belts are scientifically made of ply upon ply of strong, specially woven cotton duck tightly bonded together to prevent internal

friction while flexing. Resilient, long-lasting live rubber gives covers extra stamina. Precision controlled vulcanization moulds plies and covering into a belt that carries maximum tonnages at minimum costs.

Whether your needs are Conveyor Belting for hauling rocks, sand, gravel or aggregates . . . or flat transmission belts, V-belts . . . Quaker has a performance-proved belt that will do the job at rock bottom cost. See your Quaker distributor, or write us today for the full details.

BELTING FOR MAXIMUM HORSEPOWER

V-Belts or Flat Belts, Quaker has the one to fit the drive . . . to transmit maximum horsepower at the lowest operating cost—all pre-tested for peak performance.



QUAKER RUBBER CORPORATION • PHILADELPHIA 24, PA.

Division of H. K. Porter Company, Inc.
OFFICES AND BRANCHES IN PRINCIPAL CITIES

FREE!

Tips on how to
get the most out
of Conveyor
Belting!

Here's essential
data for you . . .
write today for
Bulletin 63-P-U



QUAKER RUBBER PRODUCTS
custom made for every industrial use



USE THE RIGHT TOOL FOR THE JOB . . .



*
a Billings
will do it
better!



Ask your BILLINGS DISTRIBUTOR
He'll tell you why!

* VITALLOY® FORGED
WRENCH...

EVI

THE BILLINGS & SPENCER CO. HARTFORD 1, CONN. U.S.A.

Cleveland, O.—David Round & Son. W. J. McSherry has been appointed sales manager. W. G. Holley, whom he succeeds, is now general manager.

Reading, Pa.—The Carpenter Steel Company. H. Sturgis Potter has been appointed general sales manager. He succeeds the late R. V. Mann, who was



H. Sturgis Potter

vice president in charge of sales. Mr. Potter had previously been sales manager in charge of Reading mill products.

Philadelphia, Pa.—Edgewater Steel Company. J. H. Perry, Jr., the company representative here for many years, has been made a district manager. He will be responsible for sales in both Philadelphia and Washington territories.

Philadelphia, Pa.—SKF Industries, Inc. Stuart H. Smith has been named manager of industrial development, and John H. Tipton has been appointed Cincinnati district manager.

Edmonton, Alberta, Can.—Tube Turns of Canada Limited. Wayne E. Williams has been appointed western district manager.

Allentown, Pa.—The Aldrich Pump Company. R. H. McPeake has been appointed sales manager.

Waltham, Mass.—Russell Electric Company. Shannon C. Powers has been appointed general sales manager of the company, a subsidiary of Raytheon Manufacturing Company.

Syracuse, N. Y.—Lipe-Rollway Corporation. A. Alven has been named general sales manager, in charge of all sales, including machine tool, bar feed, hacksaw and clutch sales.

Philadelphia, Pa.—Pennsylvania Salt Manufacturing Company. Albert H. Clem has been appointed to the new post of assistant to the vice-president in charge of sales.

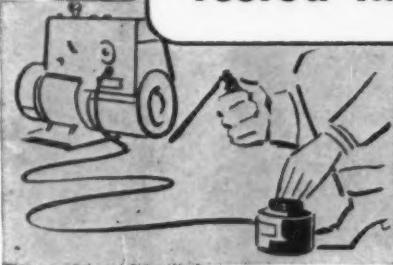
Bridgeport, Conn.—Heppenstall Co. Raymond T. Porter has been appointed eastern sales manager, with headquarters here.

Boston, Mass.—American Cyanamid Company, Calco Chemical Division. David T. Cornfoot has been appointed assistant to the manager here. W. E. Small has been named assistant to the manager in the Providence, R. I. office.

(Please turn to page 234)

P & H
gives you

**the only DC Arc Welder with all these
tested time- and money-saving features**

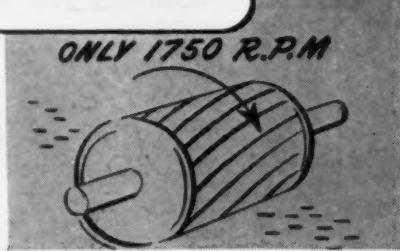


BUILT-IN REMOTE CONTROL Dial-electric feature gives full arc-control at the work . . . saves operator's time . . . saves floor space for production.

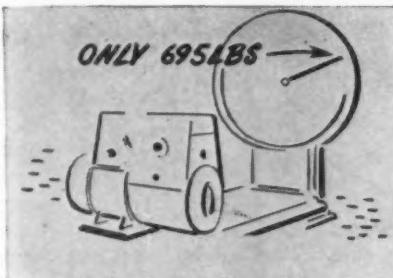


**P&H Model
WFA-300**
Welding Service Range
60-375 amps
(NEMA-Rated)

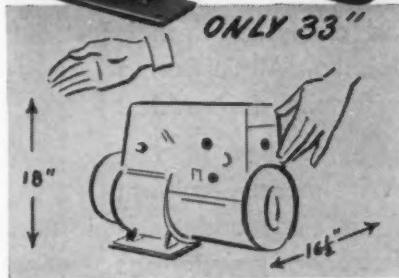
ONLY 1750 R.P.M.



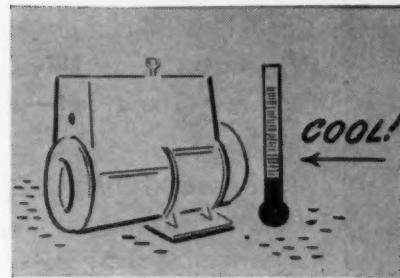
SLOW SPEED Lowest rpm per pound of weight. Only 1750 rpm for less wear, longer life, and minimum replacement costs. So quiet you hardly hear it.



LIGHT WEIGHT Easy to handle and move. Facilitates mounting off the floor and out of the way so there's more room for turning large weldments. Weighs only 695 lbs.



STURDY AND COMPACT Four sets of main brushes and one auxiliary set firmly fastened for good commutation. Simple design and rigid construction throughout . . . space-saving dimensions.



COOL OPERATION Slow speed plus extra large stator-frame cooling surfaces, and dual fans (for generator and motor) — make this the coolest welder you have ever seen.

● Stationary or portable mountings—Additional Features: single heat control; life-time sealed bearings; push-button start- and -stop switch with overload protection; high-low range switch; and polarity reversing switch. Get all the facts. Call your P&H representative, or send in coupon.

P & H

**WELDING
DIVISION**

Milwaukee 14, Wisconsin

HARNISCHFEGER

CORPORATION



Specialized Training in Metal Welding Fabrication

1 week to 18 months

Harnischfeger Welding Training School
in conjunction with
Milwaukee School of Engineering

Write to P & H today for further details

HARNISCHFEGER CORPORATION, Welding Division
4577 W. NATIONAL AVENUE • MILWAUKEE 14, WISCONSIN

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZER • CRAWLER AND TRUCK CRANES •
DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES



Good News—

Johnson XLO Music Spring Wire now goes to you made from Swedish electric steel rod. Another advance in Johnson highly specialized production.

Johnson researchers plus the resources of Swedish steelmakers have developed an electric furnace steel, with closely controlled analysis, which is being used exclusively in Johnson Music Spring Wire. The result—more uniformity and added fatigue.

Johnson XLO Music Spring Wire means—uniform cast, uniform tensile, uniform size and self-lubricating surface.—The reliability of your springs begins with the wire.

JOHNSON

STEEL AND WIRE COMPANY, INC.
WORCESTER 1, MASS.

New York
Atlanta

Philadelphia
Houston

Cleveland
Tulsa

Detroit
Los Angeles

Akron
Chicago
Toronto

Philadelphia, Pa.—Charles J. Haas, Inc. E. C. Barlow, formerly with E. F. Houghton & Co., for 24 years as sales manager for the central division, and later assistant to the executive vice-president, has become affiliated with Haas.

Detroit, Mich.—Firestone Industrial Products Company. John H. Palmer has been appointed manufacturers sales manager in the Detroit area.

Cleveland, O.—Elwell-Parker Electric Company. H. F. Black, president of the H. F. Black Equipment Company and J. W. Coulton, assistant sales manager



H. F. Black

of Elwell-Parker, have announced the formation of a partnership under the name of H. F. Black Equipment Company for the exclusive sale of Elwell-Parker power industrial trucks and allied



J. W. Coulton

materials handling equipment in northeastern Ohio. The firm is located here in the Union Building, 1836 Euclid Avenue.

Chicago, Ill.—The Diversey Corporation. B. W. Powers, formerly a field service representative in Indianapolis for the maintenance products department, has been named district manager for the Chicago area.

Toledo, O.—Willys-Overland Motors, Inc. Donald T. Ellis, identified with the company's sales activities for the past five years, has been named to the administrative post of fleet and truck sales manager.

New Orleans, La.—Signode Steel Strapping Company. J. F. Beckman has been appointed district manager of the New Orleans district.

(Please turn to page 236)



"-but my order
is only
chicken
feed"....

Not to us! Small orders for springs, samples, or experimental lots are made in special departments equipped through experience for just such service. Go to one of the plants below, when you need springs, in any amount.



**WALLACE
BARNES
COMPANY**
BRISTOL,
CONNECTICUT

**THE WILLIAM
D.GIBSON
COMPANY**
1800 CLYBOURN AVE.
CHICAGO 14,

**RAYMOND
Manufacturing
COMPANY**
CORY,
PENNSYLVANIA

**BARNES-
GIBSON -
RAYMOND**

6400 MILLER AVE., DETROIT 11,
and ANN ARBOR, MICH.

**DUNBAR
BROTHERS
COMPANY**
BRISTOL, CONN.

**OHIO
DIVISION**
1712 EAST FIRST ST.
DAYTON, OHIO

**THE WALLACE
BARNES
COMPANY LTD.**
HAMILTON, ONT.
CANADA

U. S. DIVISIONS OF
ASSOCIATED SPRING CORPORATION
AND CANADIAN AFFILIATE

THE BEST
SEVEN SOURCES
FOR
MECHANICAL
SPRINGS

SHIMS DO MORE
when they're made of
LAMINUM

THE SOLID SHIM STOCK THAT P-E-E-L-S FOR ADJUSTMENT

LAMINUM shims look like solid metal—but actually they're made up of a number of .002" (or .003") layers of brass or steel. The laminations are bonded together, securely, over their entire surface. Yet they peel easily with a penknife.

- They accurately adjust spacing in assembly
- Save up to 30% in assembly time
- No machining, grinding or filing required in fitting
- No dirt or grit between layers
- No counting or stacking loose, separate shims
- All adjustments right at the job
- It's easy!

We also make loose-leaf shims and packs of shims that are soldered together. But in most cases, the LAMINUM shim is superior—and impressive in its overall economy.

MOST IMPORTANT!

We've been in the shim business for 37 years. Our large, modern plant in Glenbrook, Conn. has every facility to serve you, INCLUDING ENGINEERING SERVICE on this specialty of ours. Get in touch with us. No obligation, of course.

SEND TODAY for our free engineering data file and sample of LAMINUM.

LAMINATED SHIM COMPANY, INC.
2412 UNION STREET GLENBROOK, CONN.

CUSTOM SHIMS

STAMPINGS **SHIM STOCK** **AN-COR-LOX NUTS**

New York, N. Y.—Prufoat Laboratories, Inc. G. Russell Hersam has been appointed general sales manager.

East Alton, Ill.—Western Brass Mills, division of Olin Industries, Inc. Huntly M. Campbell has been appointed assistant general sales manager and Edgar N. Rousseau has been named assistant to the general sales manager.

Howell, Mich.—Howell Electric Motors Company. James F. Murphy has been appointed general sales manager.

Dayton, O.—The Producto Machine Company. A new warehouse and assembly plant has been opened here at 3632 Delphos Avenue. Neil Griest has been named branch manager.

Philadelphia, Pa.—The Ohio Injector Company. Paul E. Warner has been named district sales manager here. He succeeds John C. Ruf who held the post for the past 10 years and who has retired.

Port Chester, N. Y.—Russell, Burdsall & Ward Bolt and Nut Company. Rollin B. Plumb, formerly vice president in charge of sales of Eagle Lock Company, has joined RB&W in an executive capacity.

Erie, Pa.—Erie Resistor Corporation. Rear Admiral C. A. Rumble, USN, (Ret.), formerly head of the electronics branch in the office of the Chief of Naval Operations, has joined the firm as manager of the Washington division.

New Bedford, Mass.—Morse Twist Drill & Machine Company. A. L. Carr has been named to succeed J. C. Kuhn as vice-president and director of sales. Mr. Kuhn has retired. C. F. Myers formerly midwest district manager, has been named sales manager.

Pittsburgh, Pa.—Cutler-Hammer, Inc. O. P. Robinson has been named manager of the company's district office here.

Philadelphia, Pa.—General Refractories Company. Mervin A. Fay has been named assistant general sales manager.

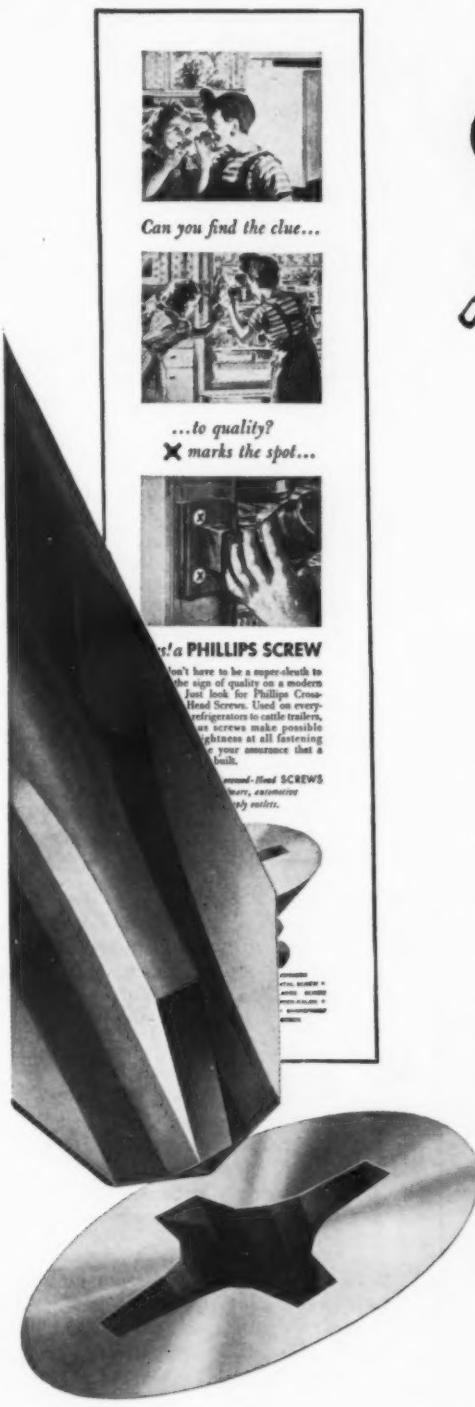
Rutland, Vt.—The Howe Scale Company. Walter F. Garlow has been named sales promotion manager.

New York, N. Y.—United States Rubber Company. Joseph A. Conlon, formerly district sales manager, Chicago branch, has been appointed manager of allied sales for the mechanical goods division. Edwin D. Meade has been named to the Chicago position.

INDUSTRIAL DEVELOPMENTS

Heyden Chemical Corporation will spend approximately \$1,175,000 for additions to existing manufacturing facilities at its Garfield, N. J. plant. Principal items are a new power plant unit and new units for the production of Pentaerythritol.

(Please turn to page 238)



Does your product have this clue to quality?

Use of Phillips Screws proves extra care in manufacture

Production men know. Design engineers know. Purchasing agents know. AND NOW THE PUBLIC KNOWS that . . .

X marks the spot . . . the mark of extra quality. The identifying X formed by the cross-recess on the head of every Phillips Screw.

14 million readers of The Saturday Evening Post are being urged to look for this clue to quality in modern, well-built products.

Phillips Screws make your product stronger, better looking. They eliminate jagged burrs, split screw heads, make production power driving possible. Whether you use Phillips wood screws, machine screws or tapping screws you gain time, money, work-hours.

◀ Current advertisement on Phillips Screws appearing in The Saturday Evening Post.

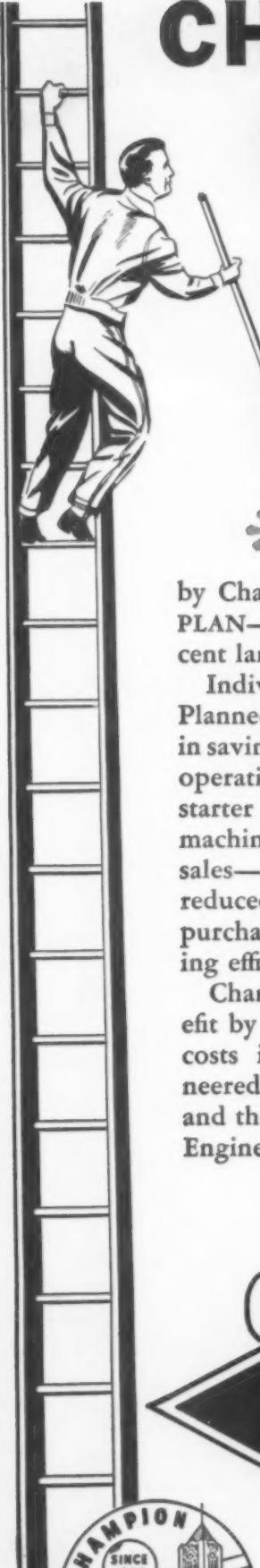
PHILLIPS Cross-Recessed-Head SCREWS

X marks the spot...the mark of extra quality

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF INC. • THE SOUTHBURY HDWE. MFG. CO. • WALES-BEECH CORP.



THE FASTENERS OF TODAY . . . AND OF THE FUTURE



CHAMPION'S G. R.* *saves you* **60% LABOR TIME 60% LABOR COSTS**

* Industrials—Stores—Office Buildings—Schools and others can profit by Champion's GROUP REPLACEMENT (G. R.) PLAN—the first complete G. R. Plan in fluorescent lamp history!

Individual replacement of lamps is costly. Planned replacement of lamps in groups results in savings. Champion's G. R. Plan, fitted to your operation, will give you lower labor costs, lower starter costs—less interference with production machinery, with workers, students, customers, sales—decreased spoilage of work in process—reduced accident hazards—controlled planned purchasing and maintenance—increased lighting efficiency—improved appearance.

Champion engineering shows *you* how to benefit by G. R., using *your own* figures and labor costs in conjunction with Champion's engineered G. R. charts. For detailed information and the G. R. Bulletins, address our Commercial Engineering Department.

* Group Replacement



Fansteel Metallurgical Corporation, North Chicago, Ill., has begun work on a \$390,000 program to expand facilities for production of tungsten and molybdenum. When the new equipment being installed is put into use, production at the rate of 260% of the original capacity will be attained.

Monadnock Mills, a wholly-owned subsidiary of United Carr Fastener Corporation, Cambridge, Mass., has purchased a 52,000 sq. ft. building in San Leandro, Calif. The firm produces aircraft fastening devices for both military and commercial users.

National Lead Company, New York, N. Y., will construct new sulfuric acid plants in St. Louis, Mo., and Sayreville, N. J. Both will have capacities in excess of 300 tons per day, which will be used to expand the company's titanium pigment facilities.

Drake Manufacturing Co., Chicago, Ill., has acquired all manufacturing and sales rights to the special neon-glow indicator lights formerly made and distributed by Littelfuse, Inc. The lights are used on electrically operated equipment.

Beaver Industries, Chicago, Ill., manufacturer of screw machine products, has added a cold heading department for producing standard and special cold upset screws, studs and rivets.

Sterling Electric Motors, Inc., Los Angeles, Calif., has acquired an 11-acre site in Van Wert, O., for the construction of a branch plant to serve the company's mid-western and eastern business.

Federal Tool and Manufacturing Company, Minneapolis, Minn., has added short-run stampings of phenolic resins, vulcanized fibres, plastics, insulation paper and other non-metallic materials to its services.

Columbus McKinnon Chain Corporation, Tonawanda N. Y., has purchased the plant, equipment and inventory of The Dixon Chain Manufacturing Company, Inc., Dixon, Ill.

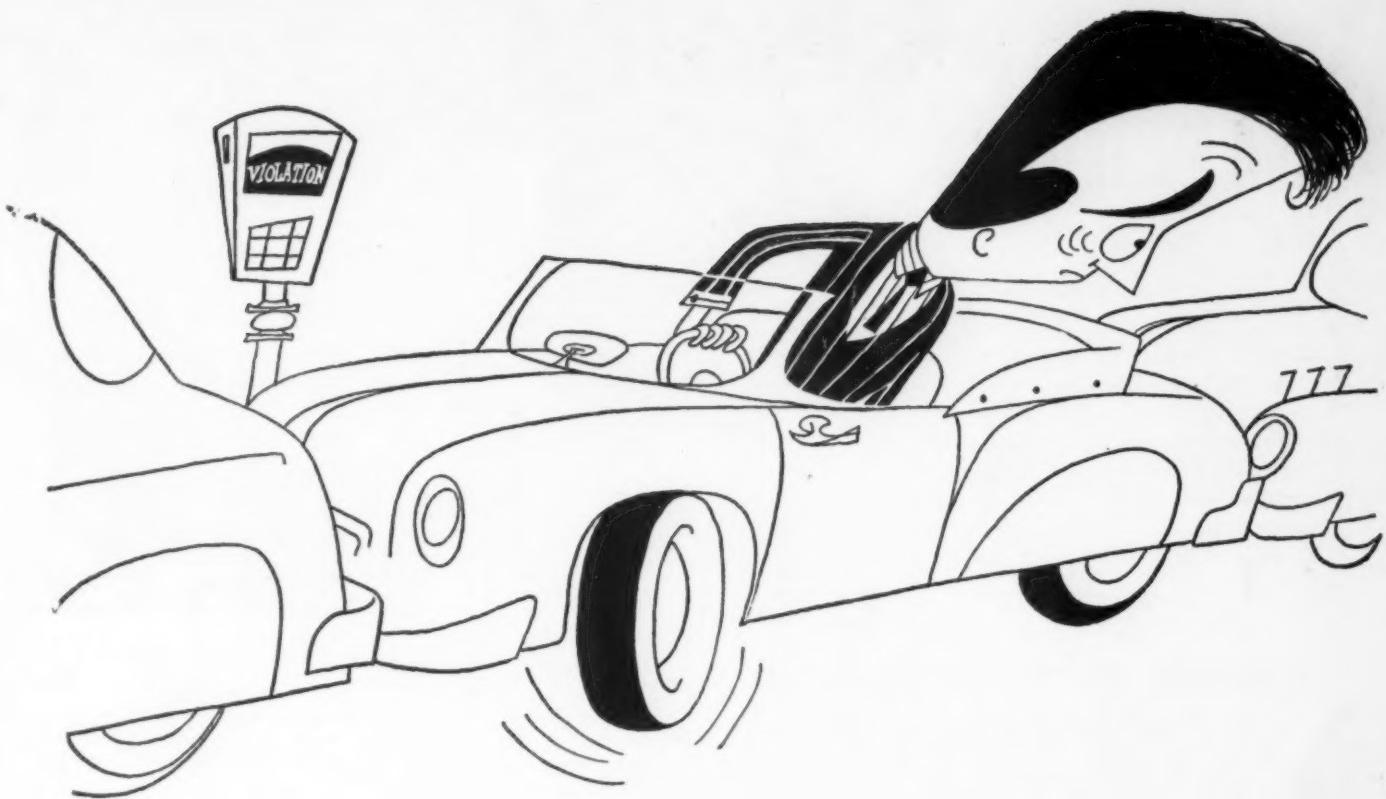
The Die Supply Company has moved into a new \$200,000 plant at 1400 Brookpark Road, Cleveland, O.

Kenworth Metal Stamping Co., Milwaukee, Wis., has been purchased by John A. Evans, new president and treasurer. Mr. Evans was formerly with Allis-Chalmers Mfg. Co. as a project engineer in the electronics section.

Morris Bean & Company has put into operation a new aluminum precision molding foundry at Yellow Springs, O. The new foundry consolidates activities previously carried on at two different locations.

Radio Receptor Co., Inc., Brooklyn, N. Y., has purchased a 90,000 square foot factory structure to house its expanding divisions. The company manufactures radio and electronic components and complete assemblies for industry and government.

(Please turn to page 240)



up against it?

When schedules are tight and time is too short for a mill shipment take advantage of Crucible's 23 warehouses . . . completely stocked to meet your requirements. If you're out of stock, or don't need a mill-sized shipment, Crucible's immediate delivery makes your inventory planning easy.

Let Crucible be your warehouse. Come in to the Crucible warehouse near you. See for yourself the complete stocks, and how well prepared we are to serve you. Be sure to make full use of Crucible's metallurgical service which is freely available to you. CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, New York.

*Complete stocks maintained of
Rex High Speed Steel . . . AISI Alloy, Machinery, Onyx Spring
and Special Purpose Steels . . . ALL grades of Tool Steel (in-
cluding Die Casting and Plastic Die Steel, Drill Rod, Tool Bits
and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire,
Billets, Electrodes)*

CRUCIBLE

first name in special purpose steels

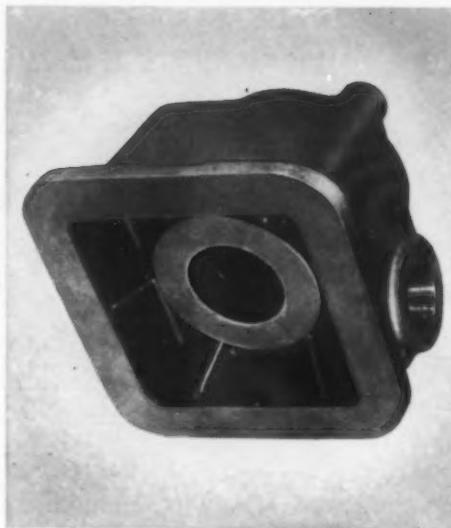
WAREHOUSE SERVICE

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER
DETROIT • HOUSTON, TEXAS • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH
PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • SYRACUSE • TORONTO, ONT. • WASHINGTON, D. C.

SUPERIOR

in more
than name

To make every gray iron casting meet your exact specifications is the aim of Superior Foundry's complete staff of production casting experts. Such high standards require organization, experience, modern equipment and never-ceasing "Quality Control."



This easily machinable rigid, porous-free alloyed gray iron casting is a housing which, under varying hydraulic pressures, retains worm and other gear assemblies for speed reduction.

...here is the modern equipment behind every Superior Gray Iron Production Casting



Complete Electric Furnace Process



Continuous Drying Ovens



Complete Metallurgical Control



High Speed Continuous Mold Conveyors

THESSE are just a few of the modern facilities that enable Superior to produce castings ranging from 1/2 lb. to 1200 lb. in any quantity and to your particular specifications. Whether you want straight cupola gray iron or electric furnace iron castings with or

without alloys, you'll discover that Superior Foundry's complete metallurgical control assures uniform grain structure, adherence to your specifications and a clean, smooth finish. Bring your production casting problems to us today.

SUPERIOR FOUNDRY, INC.

3542 EAST 71st STREET • CLEVELAND 5, OHIO
Member of: Gray Iron Research Institute • Gray Iron Founders Society

VULCAN 3-8000



American Cladmetals Company, now integrating all its operations at its Carnegie, Pa. plant, will complete installation of a thirty inch wide cold reduction mill early in 1951. The Carnegie plant is the only one in the country devoted entirely to the production of cladmetals.

The General Electric Company recently opened its new measurements laboratory at Lynn, Mass. H. E. Strang, manager of the company's Meter and Instrument Divisions, said that "it represents the



G.E.'s new measurement laboratory

ultimate in facilities devoted exclusively to development of new measuring devices, the creation of new materials for these devices, and the critical analysis and improvement of designs already on the production line."

Diamond Alkali Company, Cleveland, O., has purchased the chromic acid business of the E. I. du Pont de Nemours and Company, Wilmington, Del. The product will continue to be manufactured by du Pont at its Philadelphia plant, and under the terms of sale, Diamond will take over distribution of the product on January 1, 1951.

H. K. Porter Company, Inc., Pittsburgh, Pa., has sold its locomotive business, including patterns, drawings, and spare parts business to Davenport-Besler Corporation (Davenport Locomotive Works), Davenport, Iowa.

The Columbia Chemical Division of Pittsburgh Plate Glass Company has begun partial production of perchlorethylene, an organic chlorinated solvent, at the firm's Barberton, O. plant. The product is described as a superior dry cleaning and metal degreasing solvent.

Link-Belt Company, Chicago, Ill., has appointed Bertram V. Jones as advertising manager to succeed the late Julius S. Holl. He had previously been executive assistant advertising manager of the company.

H. K. Porter Company, Inc., Pittsburgh, Pa., has acquired Connors Steel Company, Inc., of Birmingham, Ala., producers of electric furnace steel and steel products.

Kano Laboratories, formerly of Chicago, Ill., has moved to a new location in Nashville, Tenn. The company manufactures various lubricants and protective products including Kano Kroil for loosening frozen bearings, etc.

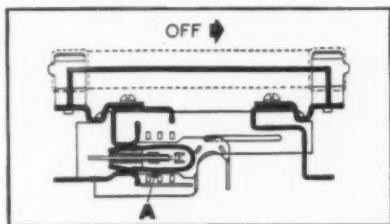
(Please turn to page 242)

NOW...an ALL-NEW Type A Safety Switch for modern high-capacity distribution systems...

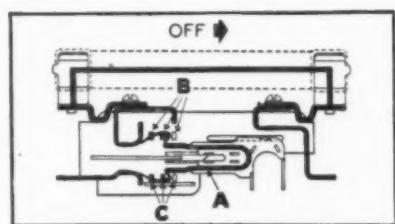
TRUMBULL'S **HCI** HIGH CAPACITY INTERRUPTER

Unusually high interrupting capacity . . . "circuit-breaker" action breaks heavy loads quickly, safely. Extremely high momentary current capacity . . . withstands heavy short circuits without damage. 30-, 60-, 100-ampere sizes.

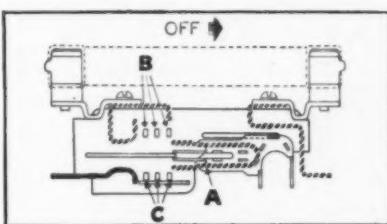
Here's How... HCI's "Circuit-Breaker" Action Works



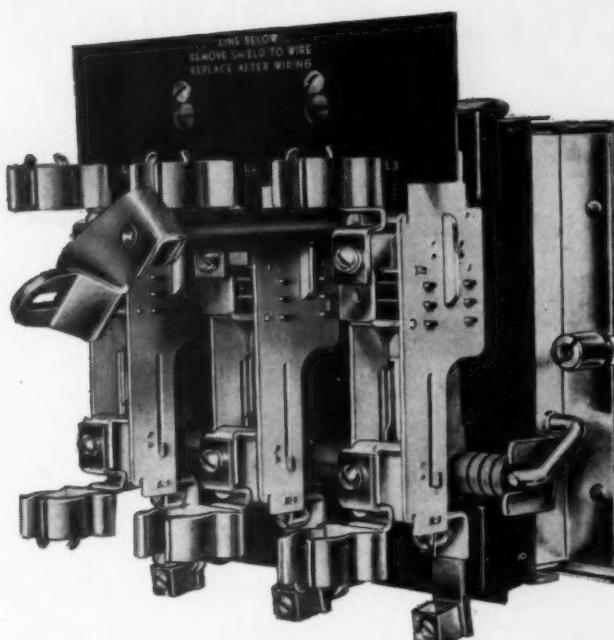
1. Switch closed. Spring-loaded sliding contact (A) fully inserted between stationary contacts. Heavy line is current.



2. Sliding contact being withdrawn. The two arcs repel each other, are drawn against grid pins (B) and (C), which break and cool them.



3. Contact fully withdrawn. Trumbull's unique "Circuit-Breaker" action has effectively extinguished the arcs.



CHECK THESE ADDITIONAL SPACE-SAVING, TROUBLE-PREVENTING, LIFE-LENGTHENING FEATURES

Center-front operation permits close ganging.

Front fusing allows compact box, yet gives ample wiring space.

No exposed live parts when switch is OFF and door is open.

Handle interlock.

Clear ON and OFF markings both inside and outside.

No dead center—roller-cam action (multiplying linkage design with powerful spring) throws switch to full OFF and ON.

Poles are self-contained switching units for easy replacement.

Silver-plated current-carrying parts prevent oxidation . . . give low-resistance contact.

Insulating parts made of linen mela-mene, light, strong, arc-resisting.

Enclosed operating mechanism (on 60- and 100-amp. sizes) prevents wire chafing.

Interior removable for wiring ease.

Underwriters' approval throughout.

For more information about Trumbull's all-new HCI Safety Switch, write for your free copy of Bulletin TEC-10 today. THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Connecticut.

Men Who Observe the Best Electrical Practice Make It a Practice to Use

TRUMBULL ELECTRIC

TRUMBULL'S TRAINLOAD OF NEW PRODUCTS

Production Men

choose **Polyken®**
INDUSTRIAL TAPE

DOZENS OF SPECIFIC TAPES
FOR HUNDREDS OF SPECIFIC USES

TYPICAL POLYKEN PRODUCTION JOBS



Tape No. 524—prevents "contact" oxidation.



Tape No. 158—protects machine parts in production.



Tape No. 151—protects worker's fingers.



Tape No. 214—protects precision bearing housings.

PRODUCTION MEN credit one or more of the many versatile **POLYKEN** Industrial Tapes with savings up to 85%! These "specific tapes for specific uses" can help *you* cut costs, save time, improve methods!

Replaces Old-Fashioned Methods!

Each **POLYKEN** Industrial Tape replaces costly, inadequate, hard-to-handle materials, for bundling, tying, sealing, edging, holding, insulating, reinforcing, repairing, marking, masking—and many others.

Meets Special Adhesive Needs!

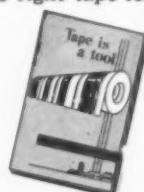
Adhesive masses of **POLYKEN** tapes can be made with one or more of these "built-in" qualities: non-corrosive, non-staining, heat- or flame-resistant, low or high tack, vulcanizable, low temperature, colored, transparent, strong anchorage to backing.

Solves Specific Backing Problems!

POLYKEN's cloth backings can include any of these qualities: tensile strength, thickness or thinness, non-transparency, flexibility, resistance to tearing, abrasion, weather, moisture vapor.

FREE BOOKLET!

To help you choose the right tape for your job, write today for your FREE copy of "Tape Is a Tool." Or our research department will gladly work with you. Write **POLYKEN**, Dept. 9-12.



Polyken®
INDUSTRIAL TAPE

DEPARTMENT OF
BAUER & BLACK
DIVISION OF THE KENDALL COMPANY
222 W. ADAMS ST., CHICAGO 6

The Gem Ware Manufacturing Company, Los Angeles, Calif., has been purchased by Frank E. Gaines, founder of Aerol Co., Inc., now a Lockheed subsidiary. Gem Ware in addition to a line of cooking ware, manufactures castings of magnesium for industrial users.

Johnson Plastic Corporation, manufacturer of plastic pipe and extruded plastic industrial products, has acquired large plant facilities in Chagrin Falls, O. The company has also purchased equipment which will more than double its production capacity.

Safety Socket Screw Company, Chicago, Ill., has moved into a new and larger plant. All operations on "Blue Devil" socket screws are now performed under one roof.

Wagner Electric Corporation, St. Louis, Mo. recently concluded a successful two-day plant visit at its main plant. More than 15,000 people, all of whom received special invitations, toured the plant. Leading officials and civic figures were among the guests.

The Ohio Electric Mfg. Co., Cleveland, O., has purchased all tools, dies, fixtures, patents and rights to manufacture the complete line of Taylor & Fenn drilling machines. The Taylor & Fenn Company, located in Hartford, Conn., is one of the country's pioneer machine tool builders.



"OIL MADE OF METAL"

Liqui-Moly, introduced by the Lubricants Division of The Lockrey Co., College Point, N. Y., is a specially treated compound of the "greasy" metal molybdenum, which has the peculiar property of attaching itself by molecular attraction to metal bearing surfaces, forming a lubricating film which it is claimed cannot be "squeezed out" by any amount of pressure, and which can withstand unbelievable extremes of temperature without affecting its lubricating qualities.

The Lockrey Company has perfected a method of incorporating this material in a volatile liquid having the appearance of oil but containing no oil. This liquid serves to transport the metallic lubricant to the bearing surfaces where the vehicle evaporates and allows the molybdenum to plate out on the bearing-surfaces. The result is a perfectly dry but perfectly lubricated bearing, claimed to be safe at extreme pressures, speeds and temperatures. As an example it is being used in the hot extrusion of steel at 2250°F. Statement is made that bearings can be run continuously at red heat without affecting its lubricity or protection of the bearing metal.

Four types of the lubricant are described in bulletin 21-E, namely, Liqui-Moly NV Regular and Grease, Liqui-Moly NV Thread Compound, and Moly-Wax-Stix. Liqui-Moly NV regular and grease are both incorporated in a liquid glycol derivative having a high viscosity.

(Please turn to page 244)

BUILDERS OF THE BRASS INDUSTRY



ISRAEL HOLMES
First President: 1850-1851



ELISHA WELCH
Second President: 1851-1887



ANDREW ATKINS
Third President: 1887-1893



JAMES WELCH
Fourth President: 1893-1902



PIERCE WELCH
Fifth President: 1902-1909



JULIAN HOLLEY
Sixth President: 1910-1911



ALBERT ROCKWELL
Seventh President: 1911-1924



ALEXANDER HARPER
Eighth President: 1924-1935



ALBERT WILSON
Ninth President: 1935-1943



ROGER GAY
Tenth (and present) President: 1943+

TEN MEN
*whose names are lastingly
engraved in*
BRASS

THROUGH the minds of all these ten men . . . from Israel Holmes in 1850 to Roger Gay today . . . has run this same dominant determination: "Make Bristol Brass sheet, rod and wire the way the customer wants it. And the business will take care of itself!"

That code has proved to be, over

100 years, as sound as it is simple. For Bristol Brass has been one of the steadiest corporate ships in this country's industrial economy . . . never off an even keel, never badly storm-battered. But always, as with the merchant clippers from Bristol, England . . . Brass business conducted with the Bristol mills in

Connecticut has been found . . . by customers in *all* industries . . . to be prompt in "getting under way," shipshape and sure-handed in handling, reliable in delivery . . . and, above all, consistent in quality.

The course is set the same, now, as always. *And the running lights are bright!*

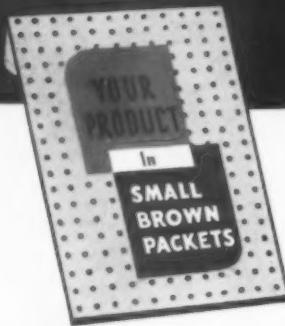
One Hundred Years of BRASS made "BRISTOL FASHION"

Like the world-famed merchant ships from Bristol, England . . . Always prompt, shipshape, reliable

The BRISTOL BRASS CORPORATION, makers of Brass in Bristol, Conn. since 1850



Point off the Cost of a Brown Packet 001



Brown packets make you low-cost conscious. In quantity they can be as little as .001 apiece and in appearance and quality, as distinctive as your full sized package. Each Brown packet is expertly sealed with uniform open ends and economical to fill. Brown Bag Heat Sealed Packets also carry every one of these qualities. Serving as 50 year old packeting specialists to drug and cosmetic leaders such as: United Drug Co., Tussy, Sutton, Colgate-Palmolive-Peet, Wrisley, Cuticura.

Do Your Sales Up "Brown"
Get a Brown Packet Quotation Today

Send for complete descriptive literature on Brown Bag Packet Filling Machinery.

BROWN Bag Filling Machine Co., Inc.

Fitchburg, Mass.

Manufacturers of Open End Envelopes, Packets and Packaging Machinery

WEST COAST REPS., Peter D. Bowley & Assoc., 210 Mississippi St., San Francisco, Cal.

(Continued from page 242)
index which will pour as low as —25F. The thread compound prevents metals from seizing or freezing together under extreme pressure, and makes it possible to dis-assemble any piping or equipment after any period of operation at high temperature or under severe corrosive condition. The Moly-Wax-Stix may be used for filling grooves, to rub on sliding ways, to lubricate glass pet-cocks and chemical glassware, to lubricate wood and plastic slides, and to cast solid lubricant shapes.

1 1 1

NEW LIFE-SAVING APPARATUS FOR INDUSTRIAL PLANTS

A unique new life-saving apparatus for industrial plant safety, police and fire departments, and so forth, is announced by the Mine Safety Appliances Co., Pittsburgh, Pa. An "automatic breathing instrument", the portable apparatus is used for victims of electric shock, poisonous or suffocating gases, heart attacks, drowning, or any kind of asphyxiation.

Called the "Pneolator", it consists of a rubber and plastic facepiece connected to valves by two four-foot lengths of corrugated rubber tubing. One of the valves administers oxygen with positive pressure at regular intervals, cycling automatically. The other valve lets oxygen flow only when the patient inhales and stops the flow on exhalation. The artificial respiration valve delivers oxygen at a pre-set pressure to the lungs of a victim whose breathing has stopped. The new apparatus will perform artificial respiration automatically and more efficiently than by the manual method. The instrument can be operated by anyone with first aid training after a short instruction course.

1 1 1

SYMPOSIUM ON WOOD UTILIZATION

A comprehensive collection of reports on wood utilization is now available from the Office of Technical Services of the U. S. Department of Commerce.

Originally prepared under the joint sponsorship of the Office of Naval Research and the National Research Council, the collection includes 24 presentations dealing with wood research by the armed services; the mechanisms of wood lignification and deterioration; utilization of wood for packaging, as a construction material in timber or "sandwich" form, and as conversion products; wood requirements for aircraft, shipbuilding, and other fields. A number of papers deal with fungus and insect problems, particularly with the marine borer.

PB 101 233, *Report of Symposium on Wood*, 537 pages including photographs, charts, tables, etc., sells for \$7.50. Orders should be addressed to the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., accompanied by check or money order payable to the Treasurer of the United States.

(Please turn to page 246)

ARMSTRONG-BRAY GEAR and WHEEL PULLERS



Quickly and easily pull gears, wheels, pulleys and bearings off of shafts without damage or breakage.

Improved designs make them easy to set up and safe in use — the harder the pull the tighter the grip.

12 types, 40 sizes—2-arm, 3-arm, standard and special STEELGRIP Pullers with drop forged arms and heat treated screws as well as CHAINGRIP Universal Pullers that reach to considerable distances from end of shaft.

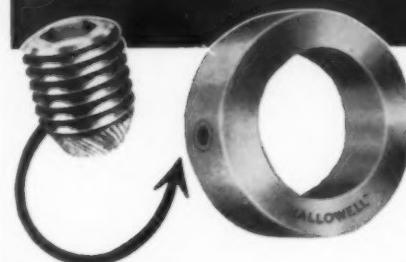
Write for Catalog

ARMSTRONG-BRAY & COMPANY
5368 NORTHWEST HIGHWAY
CHICAGO 30, U.S.A.



HALLOWELL

Steel Collars



HALLOWELL Solid Steel Collars, functionally proportioned throughout . . . precision-machined so faces run perfectly true . . . are beautifully polished all over . . . yet they cost less than common cast iron collars. 3" bore and smaller are made from Solid Bar Stock. To make sure the collar won't shift on the shaft, they are fitted with the famous UNBRAKO Knurled Point Self-Locking Socket Set Screw—the set screw that won't shake loose when once tightened. HALLOWELL . . . "buy word" in shaft collars . . . available in a full range of sizes for IMMEDIATE DELIVERY.

Write for name and address of your nearest HALLOWELL and UNBRAKO Industrial Distributors.

OVER 47 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

JENKINTOWN 31, PENNSYLVANIA

The Plus Factors which make OKOLITE-OKOPRENE Your Best Buy in Electrical Cable

From the inside out, every component of Okonite cable has a plus value which adds to cable life. That's because the Okonite manufacturing process carries on from where conventional cable design leaves off. The finished cable is a combination of all these exclusive Okonite developments—the best that modern research and manufacturing techniques can produce.

CONDUCTORS *

not "tinned", but Okoloy-coated.

INSULATION

not just rubber, but natural Wild Up-River Fine Para rubber.

PROTECTIVE COVERING

not just another neoprene compound, but the pioneer, time-proved Okoprene formula.

PROCESSING

not the commonly used extrusion method, but the famous Okonite precision strip-process.

VULCANIZATION

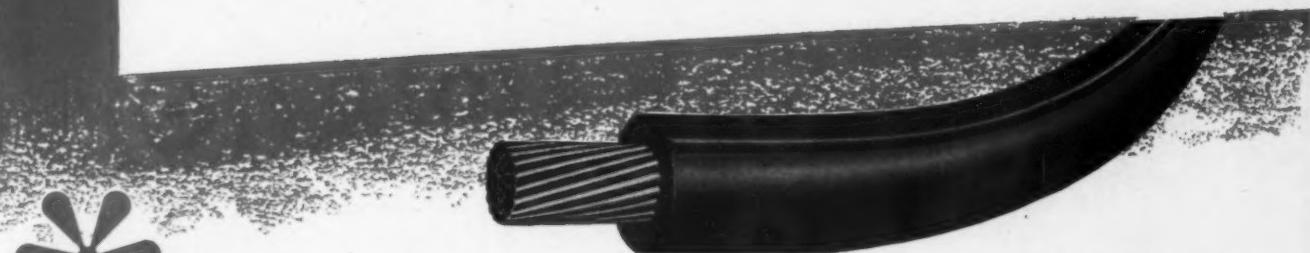
not with life-shortening "double-cure", but with strength-retaining single vulcanization in a metal mold.

TESTING

not just a single voltage test, but both high voltage a-c and super-voltage d-c tests.



Before coating conductors with Okoloy, the annealed copper wire is electrolytically cleaned, thoroughly scrubbed, wiped, rinsed and wiped again.



The Okoloy process was introduced in 1928 to offset two factors frequently encountered in tin conductor-coatings which lessen long cable life—1) tin coatings readily alloy with copper in the processing bath and, as a result, some copper always remains in contact with the rubber insulation; and 2) the sulphur contained in the rubber compounds then reacts with and destroys the tin-copper coating which in turn exposes the copper conductor, eventually causing deterioration of both the conductor and the rubber insulation.

Okoloy affords protection against both these factors because it is a lead alloy. Of all common

metals, lead is least damaged by sulphur acids. Moreover, lead does not alloy with copper under the condition encountered in coating conductors. Because processing baths are not contaminated with copper the Okoloy coating is pure throughout. It adheres strongly to the copper conductor, and surrounds it with an acid-resistant, flexible coating which contributes materially to longer life of both rubber insulation and conductor.

This is only one of the six principal plus factors which contribute to the extra-long life of Okonite cables. For detailed information on OKOLOY, write for Bulletin PG-2019 to The Okonite Company, Passaic, N. J.



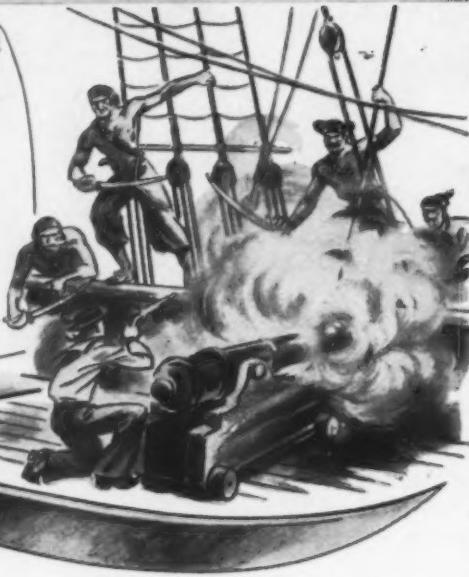
THE BEST CABLE IS YOUR BEST POLICY

OKONITE SINCE 1878 **insulated wires and cables**

8605

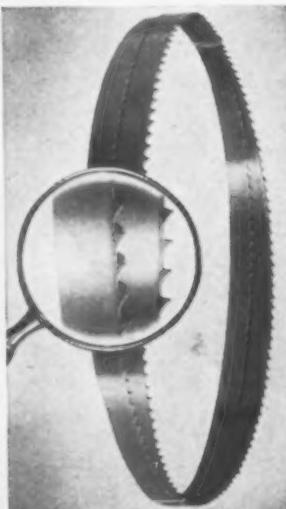
BARNES METAL CUTTING SAWS

FAMOUS
BLADES
IN
ACTION



The CUTLASS

Strongly back-edged and heavy, the Cutlass was an efficient tool whether it was used in battle or to clear storm tangled wreckage. Ships no longer carry these famous blades and the history of progress must record a loss to man and boy who thrill to tales of piracy and adventure.



BARNES SAW BLADES RUGGED EFFICIENT DEPENDABLE

Progress in the craft of making metal cutting saws has resulted in the out-moding of many of our methods of metal separation—and greatly improved the efficiency of tooling and fabrication in modern mass production. Barnes blades—famous for their dependability—are the result of over 30 years of research and improvement—and there's a dependable Barnes saw blade for every metal cutting purpose.



The special tooth form of Barnes "Skip Tooth" blade prevents clogging or loading at high speeds or heavy feeds. The "Skip Tooth" is used for precision and production cutting of soft non-ferrous metals, wood and plastics.

Whether you use Barnes Band Saws, Hand or Power Hack Saws—Your Industrial Distributor is a convenient source of supply and information. He will help you select the right Barnes Blade for the Job.



W. D. BARNES CO., INC.

1297 TERMINAL AVE.

DETROIT 14, MICH.

PLANT MAINTENANCE SHOW CLEVELAND—JANUARY 15-18

The second annual plant maintenance show is scheduled to be held in Cleveland January 15-18, 1951, with some 200 exhibitors. The conference sessions, sponsored by the American Society of Mechanical Engineers and Society for the Advancement of Management, will cover various phases of preventive maintenance, management for maintenance, lubrication and housekeeping. Detailed information in regard to the program and exhibits is available from Clapp and Poliak, Inc., 341 Madison Avenue, New York 17, N. Y.

1 1 1

Julius S. Holl

Julius S. Holl, advertising manager of Link-Belt Co., Chicago, Ill., for almost 40 years, died at the Presbyterian Hospital, Chicago, October 24, after a prolonged illness. Mr. Holl entered the employ of Link-Belt at a subsidiary company, the J. M. Dodge Co., Philadelphia, in 1905, as stenographer and clerk. He was subsequently transferred to the parent company's Philadelphia plant, joining the advertising department, and in March 1911 was made advertising manager at Philadelphia, with instructions to move the then small advertising department to Chicago headquarters. The advertising department of today consists of about 40 people and uses over 200 business and industrial publications to reach the trade.

Mr. Holl had an active hand in the development of the Engineering Advertisers Association (now CIAA), and was made president thereof in 1920. He also helped in the organization of the National Industrial Advertisers Association and was named president of that group at NIAA meeting held in London, England in 1924. He was also a member of the Association of National Advertisers.

1 1 1

UNITED STATES STEEL COMPANY COMBINES FOUR USSC SUBSIDIARIES

Irving S. Olds, chairman of the board of directors of United States Steel Corporation, recently made the following statement:

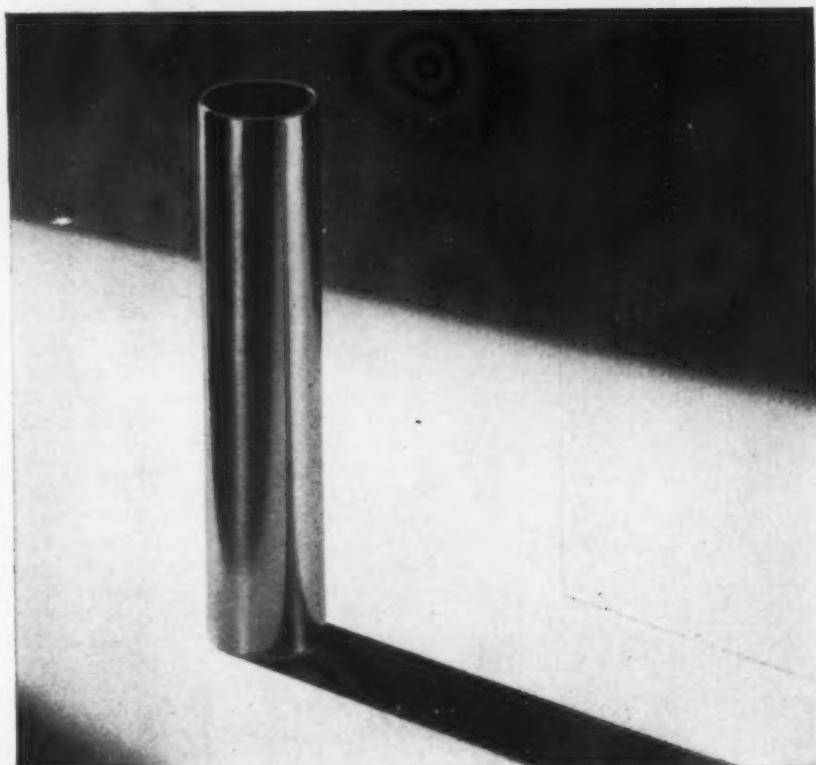
"For the purpose of bringing about a simplification of the corporate structure of United States Steel, a program has been adopted to bring together into a single operating company, as of January 1, 1951, four wholly-owned subsidiaries of United States Steel Corporation, namely: United States Steel Corporation of Delaware, Carnegie-Illinois Steel Corporation, H. C. Frick Coke Company, and United States Coal and Coke Company.

"This single company will also be a wholly-owned subsidiary of the corporation and will be called United States Steel Company. Its headquarters will be in the new office building now being erected for United States Steel and others in Pittsburgh, Pennsylvania.

Benjamin F. Fairless, who is now

(Please turn to page 248)

Can You See Two Tubes?



• There were actually *two* tubes in this unretouched photograph. One at the right was so fine—less than the diameter of a human hair! —that the screen in the printing plate almost eliminated it. The other is a Superior $\frac{5}{8}$ " O.D. tube.

Between these two sizes Superior makes tubing in all practical metals, alloys, forms, finishes, and tolerances.

Between these two sizes Superior is superior for know-how, facilities, metallurgy and technology in tubing.

There are 55 Superior Distributors in the U. S. and Canada. You can obtain excellent help, technical assistance, and advice from the one nearest you . . . and can probably obtain just the tubing you need from his adequate warehouse stock.

If you do not know your Superior distributor write directly to us for immediate attention to your tubing problems or tubing needs. Ask for Bulletin 31. Superior Tube Company, 2034 Germantown Ave., Norristown, Pennsylvania.

ROUND & SHAPED TUBING

(.010" to $\frac{5}{8}$ " O.D. Max. Certain Analyses .035" max. wall to 1 $\frac{1}{2}$ " O.D.)

Available in:

Carbon Steels:

A.I.S.I.—C-1008, MT-1010,
MT-1015, C-1118, MT-1020,
C-1025, C-1035, E-1095

Alloy Steels:

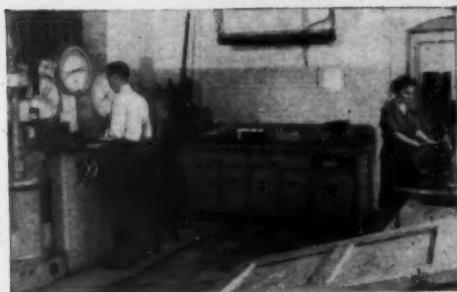
A.I.S.I.—4130, 4132, 4140,
4150, 8630, E-52100

Stainless Steels:

A.I.S.I.—303, 304,
305, 309, 310,
316, 317, 321,
347, 403, 410,
420, 430, 446,
T-5

Nickel Alloys:

Nickel, "D Nickel",
"L Nickel", "Monel",
"K Monel", "Inconel",
30% Cupro Nickel,
18% Nickel Silver,
Beryllium Copper.



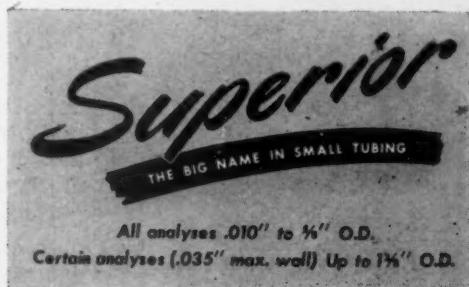
Superior's Physical Laboratory where tubing samples from every order are tested to make certain that their mechanical characteristics meet the customer's specification. Metallurgical conformity is insured by analysis in other laboratories.



One of the pickling rooms used to clean and pickle tubing. Stainless steels are often used for their appearance value as well as their resistance to corrosion and high temperature. For this reason pickling is more carefully controlled for Stainless steels than for other materials.



Partial view of the dies required for cold drawing and sinking of Superior specialty tubing. Our know-how in die design helps make Superior tubing superior.



*Reg. U. S. Trademark—Superior Tube Company • West Coast: PACIFIC TUBE COMPANY, 5710 Smithway St., Los Angeles 22, Cal. • ANgelus 2-2151



Whatever you manufacture or assemble, you can speed production and improve your product by using Pheoll screws, bolts and nuts. These industrial fasteners drive easy and straight, and will not bind because threads are accurately rolled or machined. Precision-made screw and bolt heads, slots and head recesses prevent wrench and driver slippage. Count, too, the added bonus you receive by using fasteners that improve product appearance.

An interesting story on standard and special industrial fasteners and their profitable applications to your needs may be obtained from experienced Pheoll engineers. Ask these men to recommend screws, bolts and nuts that will increase your overall profits on assembly line work.

these Pheoll products prevent production lag

- Tapping Screws • Cap Screws • Sems
- Phillips Recessed Head Screws and Bolts
- Machine Screws • Special Fasteners • Thread Cutting Screws



(Continued from page 246)

president of United States Steel Corporation of Delaware, will become president of this single company. He will continue as president of the parent company, United States Steel Corporation. The other principal executives of this single operating company will consist of five executive vice presidents: Clifford F. Hood—operations; David F. Austin—commercial; Roger M. Blough—law and secretarial; Malcolm W. Reed—engineering; George W. Rooney—accounting.

"Mr. Hood is now president of Carnegie-Illinois Steel Corporation. Messrs. Austin, Reed and Rooney are now vice presidents of United States Steel Corporation of Delaware, and Mr. Blough is secretary and general solicitor of that subsidiary. The president and these five executive vice presidents will constitute an executive committee of this single company, of which committee Mr. Fairless will be chairman and Mr. Hood, vice chairman.

"After January 1, 1951, the present sales offices of Carnegie-Illinois will be conducted in the name of United States Steel Company. There will be no change in the present customer relationships of Carnegie-Illinois. The new program does not affect the other subsidiaries of the Corporation, which will continue in business as in the past."

for the new belt are more machine output, reduced down time, longer belt life, less maintenance, and maintenance of the driven speeds required to insure product quality.

PLASTIC JUG FOR HYDROFLUORIC ACID



Development of a molded polyethylene jug for packaging hydrofluoric acid for industrial use is announced by Baker & Adamson Products, General Chemical Division, Allied Chemical & Dye Corp., 40 Rector Street, New York 6, N. Y. The jug is used to ship 10 pounds of B&A technical grade hydrofluoric acid and other liquid chemicals in small industrial lots. The package weighs only two pounds and is said to overcome the difficulties experienced with the heavy 17 pound lead containers previously used.

The jug is said to provide a shatter-proof, tough, translucent, acid-resistant package that will not develop dangerous leaks. In addition to its utility it enables the buyer to save freight on 15 pounds tare weight for each 10 pounds of acid purchased.

It is sealed with a screw-type polyethylene cap, making opening and reclosure easy, and the special design of the neck and lip insures clean, accurate pouring. For convenient shipping, four "jugs" are cell-packed in a standard returnable shipping case; singles in a wire-bound box.

NEW TYPE OF FLAT LEATHER BELT BY SCHIEREN

A new type of flat leather belting incorporating rayon tire cord insert to assure stretch-resistance, is announced by Chas. A. Schieren Company, New York, N. Y. It consists of a layer of rayon tire cords cemented between two layers of Duxbak leather belting, and is known as the Duxbak Rayon-Core belting. An extremely low stretch characteristic in service is claimed for the belt, and it is stated that some users have reported six months to a year of operation without take-up. The belt can be scarfed and made endless using the same methods as for any other flat leather belt, or, regular belt fasteners or lacing can be used in the customary manner. The Rayon-Core belt has the same degree of salvageability as ordinary belting and can be handled in exactly the same way. General advantages claimed

OIL RESISTANT IMPREGNATING VARNISH NON-CRACKING AT LOW TEMPERATURES

An impregnating varnish for electrical units which in addition to being oil-resistant, does not crack on exposure to -70 deg. F., is announced by the Frederick S. Bacon Laboratories, 172 Pleasant St., Watertown, Mass. It has been designated as ABC Impregnating Varnish. The average electrical properties of the new varnish are as follows: dielectric strength (1/16" thick) 500 volts/mil; dielectric constant at 60 cycles, 3.3; power factor at 60 cycles, 0.016; loss factor at 60 cycles, 0.05. Further details available on request.

(Please turn to page 250)

Want Additional Product Information? See Page 19.

PURCHASING

WHERE DEPENDABILITY IS VITAL ...YOU'LL FIND EXIDE BATTERIES



COZY CORNER. Steady, abundant light . . . like that at home . . . is among the comforts enjoyed by rail travelers today. On many famous "name trains," Exide Batteries provide power for lighting, air-conditioning and other electric services.



MOUNTAIN EATER. Husky, off-the-highway giants take tons of earth and rock at a single bite. In all parts of the country, they are opening up roads to new areas of wealth, knitting the nation closer. Many of these big earth-movers are equipped with Exide Batteries.



UP GOES 23 TONS, lifted with no more manual labor than the pull of a lever. Battery-electric industrial trucks have revolutionized materials handling . . . saving time, cutting costs, bringing other benefits. Thousands are powered by Exide Batteries.



WEATHER BUCKERS. Wintry weather is taken in stride by the nation's trucks and buses. Passengers must be carried to their destinations, food and other essentials moved to market. To assure dependable starting, numerous fleets of trucks and buses are Exide equipped.

Every day, in many ways, Exide Batteries are serving you, for there are Exides to suit every storage battery need. They provide motive power for battery-electric industrial trucks, mine locomotives and shuttle-cars. On railroads, Exide Batteries supply power for car lighting, air-conditioning, Diesel locomotive

cranking, signal systems. They perform many tasks on aircraft, ocean vessels . . . in telephone and telegraph service . . . in radio and television broadcast . . . in electric light and power plants. And on millions of cars, trucks and buses, they daily prove that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

Exide

Reg. Trade-mark U.S. Pat. Off.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

Doesn't matter
WHAT THEY
SPLATTER

Sawyer's

NEOPRENE*
LATEX

**protective wear gives
complete protection**

Sawyer aims to give you the *most worker-protection per dollar* with "FROG" Brand Neoprene Latex garments . . . proof against gasoline, kerosene, vegetable and petroleum oils, greases, and all but the most corrosive acids. Three solid years of research and actual, on-the-job testing have proved that Sawyer's Neoprene Latex protective clothing is the *most effective* and economical on the market.

Available in a complete range of sizes, in black or yellow, Sawyer's Neoprene Latex protective wear is roomy and comfortable . . . and **100% waterproof**.



ANOTHER FIRST RATE BUY . . .

Sawyer's HYCAR** Protective Aprons. A recent addition to Sawyer's "FROG" Brand line . . . HYCAR** aprons are light and tough, and resist most acids. They need no bulky reinforcements, for the two lightweight styles (ideal for women) have waist-ties only (tapes go under hem for greater strength) and the heavyweight HYCAR** apron has four tough and tear-proof grommets.

**American Rubber Hycar is a product of B. F. Goodrich Company
Write for our illustrated catalog and price list.

The H. M. SAWYER & SON CO.
CAMBRIDGE, MASS.

MATERIALS HANDLING CONFERENCE
10 ACRES OF MACHINES

Ten acres of materials handling equipment, indoors and outdoors, will feature Materials Handling Conference which is to be held at the International Amphitheatre, Chicago, during the fourth National Materials Handling Exposition, April 30 to May 4, inclusive. The conference will be sponsored by the American Material Handling Society and the exposition by the Material Handling Institute. Exhibits will cover six acres indoors and four outdoors. Advance registration cards and further information about the exposition may be had from Clapp & Poliak, Inc., 341 Madison Ave., New York, N. Y., who will conduct the exposition.

BAG FILLER FOR FREE FLOWING PRODUCTS



All-metal device trademarked "Scotch" brand Bag Filler for packaging free-flowing products, and which handles all popular sizes of cellophane bags, is announced by the Minnesota Mining & Manufacturing Co., 900 Fauquier St., St. Paul 6, Minn. Smallness of the bag filler permits it to be used on small scales so that weighing and filling can be done at one time. It weighs approximately 2 pounds and stands 12-inches high. The base measures 5 x 5½". At the top of the frame is a hinged hopper which has a mouth 5½" wide and a bottom opening 2½" wide. To accommodate various sized cellophane bags, the filler's hinged hopper can be raised or lowered up to two inches. Sponge rubber feet at the base of the filler hold the unit firmly, while a 1¾" rubber flap extending out from the base, directly under the hopper, prevents bags from slipping during filling.

INTEGRAL, PERMANENT MARKINGS
ON STAINLESS STEEL

A new method of applying permanent markings and designs on stainless steel has been developed by Stainless Ornaments, Inc., 12 Harcourt Street, Boston, Massachusetts.

In the process, called ATEEN-ATE, blackened stainless steel is treated to produce permanent black designs or markings.

(Please turn to page 252)



Walworth manufactures a complete line of Gate, Globe, Angle, Check, and Lubricated Plug Valves, made of Stainless Steel, Steel, Iron, Bronze, and Special Alloys in a wide range of sizes and temperature-pressure ratings.

Fittings of steel, iron, and bronze are also manufactured in all conventional types and sizes.

WALWORTH valves and fittings

60 East 42nd Street, New York 17, N. Y.

Distributors in principal centers
throughout the world



**WE OFFER YOU
PROMPT PRODUCTION OF
CLEVELAND CONTAINERS
AT LOW COST**

Our many types of combination metal and paper cans, fibre and paper cans . . . paper, fibre and plastic tubes . . . cores . . . and mailing cases combine . . .

STRENGTH • RIGIDITY • ATTRACTIVENESS

Write or wire for complete information.

The CLEVELAND CONTAINER Co.

6201 BARBERTON AVE. CLEVELAND 2, OHIO

• All-Fibre Cans • Combination Metal and Paper Cans
• Spirally Wound Tubes and Cores for all Purposes

PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wisc.,
Jamestown, N. J., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland
SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington
Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
Cleveland Container Canada, Ltd., Prescott, Ontario • Offices in Toronto and Montreal

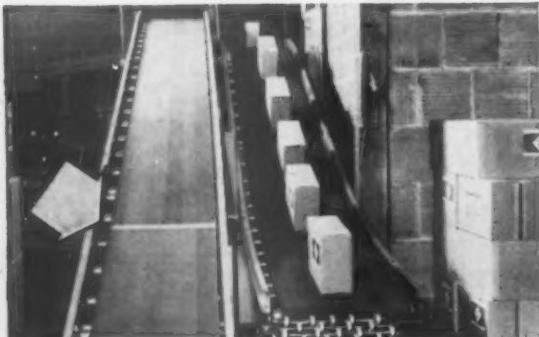
ALLIGATOR



CONVEYOR BELT LACING



Every Tooth A Vise



in Long Continuous Lengths for Conveyor Belts . . .

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and any width.

Order from Your Supply House. Ask for Bulletin A-60

FLEXIBLE STEEL LACING CO., 4697 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

(Continued from page 250)

ings in contrast to the lustrous surface of stainless. The blackened areas are actually part of the stainless steel surface; no foreign matter applied to the stainless steel. The blackened portions are claimed to have anti-corrosive qualities equal to stainless steel.

Stainless Ornamentals will use Armco Stainless Steel in their process and claim that potential uses for the new marking process are practically unlimited. An important application will be to put easy-to-read markings on dials, signs, name plates and instruments. And as the process will handle up to 132 screen half-tones, even photographs can be reproduced on stainless steel.

Other uses for permanently marking stainless steel are highway signs, bridge markers, tablet markers and memorials where permanence and resistance to corrosion are necessary.

Since the black markings are part of the stainless surface, unlike other types of markings, they will not chip, peel, or crack. In addition, having a corrosion resistance equal to stainless steel, the blackened characters and designs will resist the effects of heat, weather, moisture, and abrasion.

Further advantages of the process are that the blackened designs can be applied to flat or irregular surfaces and to either large or small areas.



DISTRICT OF COLUMBIA PURCHASING AVERAGES MILLION A MONTH

Purchases for the District of Columbia now average about a million dollars a month, according to annual report of Roland M. Brennan, Purchasing and Contracting Officer for the District. Total valuation of purchases orders for the fiscal year ended June 30, 1950, amounted to \$11,316,256, an increase of \$584,212 over the preceding year. By taking advantage of discounts offered by bidders the District realized \$40,487.53, an increase of \$3,274.89 as compared with last year. Mr. Brennan reported that a marked strengthening of prices all along the line started in the early part of 1950, and that prices skyrocketed sharply following the beginning of the Korean War in late June.

Among the major expenditures during the year were the following:

Food	\$1,970,483
Fuel	1,141,343
Furniture, wood and metal	550,373
Machinery & Equipment	303,404
Motor Vehicles, trailers, etc.	656,595
Office Equipment, typewriters etc., file cases, adding machines, etc.	302,456
Pipe fittings, meters, parts	511,648
Pipe, tubes, tubing	515,923
Stationery	341,040
Tools, hand	53,749
Tools, machine	72,780
Metal, bars, billets, ingots	128,751
Metal, plates and sheets	34,980
Paints and paint ingredients	126,049
Blank forms, printing, binding	82,131

(Please turn to page 254)

SPECIFY "Standard" STAINLESS for product improvement

Adds durability, beauty and ease of maintenance to withstand rough treatment in transportation equipment.

Indispensable for sanitation and corrosion resistance in dairy processing equipment.

Has longer life efficiency lowering costs in heat exchangers for high and low temperatures or corrosive services.

Universally used in beverage dispensing units - promotes cleanliness and longer life. Can be readily coiled.

Light wall welded stainless tubing used with threadless fittings for transmission of corrosive fluids. Reduces initial cost.

Build in the quality your product needs to meet the challenge of competitive markets with "Standard" Welded Stainless Tubing. In many applications the ultimate cost of Stainless is less than tubing made from other materials. And you get smarter, more attractive styling—rugged durability—corrosion and heat resistance—in a tubing that can take it. "Standard" Stainless is easy to fabricate, resulting in more economical manufacturing techniques for you. Let Standard's 25 years of tubing experience assist you in developing methods for product improvement requiring the use of high quality Welded Stainless Steel Tubing.

SIZE AND THICKNESS CHART for STAINLESS STEEL TUBING

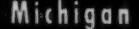
TUBE DIAMETER	MAXIMUM WALL		MINIMUM WALL		
	*O.D. SIZE	DECIMAL	B. W. GAUGE	DECIMAL	
3/8"	.035"	.035"	20	.025"	23
1/2"	.035"	.035"	20	.025"	23
5/8"	.049"	.049"	18	.028"	22
3/4"	.049"	.049"	18	.028"	22
7/8"	.065"	.065"	16	.028"	22
1"	.083"	.083"	14	.028"	22
1-1/8"	.083"	.083"	14	.028"	22
1-1/4"	.083"	.083"	14	.028"	22
1-3/8"	.083"	.083"	14	.028"	22
1-1/2"	.095"	.095"	13	.035"	20
1-5/8"	.095"	.095"	13	.035"	20
1-3/4"	.095"	.095"	13	.035"	20
1-7/8"	.095"	.095"	13	.035"	20
2"	.095"	.095"	13	.035"	20
2-1/4"	.095"	.095"	13	.035"	20
2-1/2"	.095"	.095"	13	.035"	20
2-3/4"	.095"	.095"	13	.035"	20
3"	.095"	.095"	13	.035"	20

*Intermediate sizes within the range indicated can also be manufactured. Please consult us for sizes not listed.

THE STANDARD TUBE CO.

Detroit 28, Michigan

Welded Tubing



Fabricated Parts

STANDARDIZE WITH "STANDARD" — It Pays

(Continued from page 252)

Building Material	455,879
Dry Goods	13,027
Electric Apparatus	243,218
Electric cable, wire	107,596
Precision instruments	244,008
Textile clothing	176,156
Sewer pipe, brick, etc.	244,079
Common brick	138,920

There was also an item of \$15,988 for chewing and smoking tobacco and pipes, and another of \$65,371 for toilet articles—beauty and barber shop equipment, accessories and supplies.

MULTI-COLOR FINISH IN SINGLE SPRAY OPERATION

Plestone finish makes it possible in a single spray, to secure a multi-color finish on products and interiors, according to Maas & Waldstein Co., Newark, N. J., who have been appointed sole manufacturers and distributors in the east and midwest by the originators of Plestone. Color effects are practically unlimited, through the wide range of the "Plestioned" solid colors which are readily mixed on the job, if desired, to create unique blended finishes from a single pot of paint. Finishes may be flat or glossy—or in a combination giving glossy highlights on a flat background. Plestone can be applied to practically any surface—wood, wallboards, plaster, metals, cement, paper and composition materials.

GARLOCK PACKINGS AND GASKETS MADE OF TEFLOL

Packing and gasketing materials made of Teflon are fabricated by the Garlock Packing Co., Palmyra, N. Y., from a tetrafluoroethylene resin developed by E. I. duPont de Nemours & Co. They are extremely inert to chemicals, heat resist-



Teflon packings and gaskets are unaffected by acids and are highly resistant to organic solvents and alkalis

ant, tough and durable, and are said to solve the problem of sealing against acids and chemicals of all kinds. The Garlock packings and gaskets made thereof are unaffected by any acid and are highly resistant to all organic solvents and alkalis. They operate at temperatures from below -90 deg. F. up to 500 deg. F., and have high mechanical strength and a low coefficient of friction within that temperature range. Several types of braided and molded Teflon packings for use on valves, pump rods or shafts and other equipment are available. For gasketing flanged joints

of all kinds, including glass and porcelain flanges, Garlock envelope gaskets made of a suitable gasketing material encased in Teflon or gaskets made of solid Teflon are available in required sizes and shapes.

1 1 1

DIRECTIONAL VALVES GIVE MULTIPLE-HAZARD FIRE PROTECTION

By the use of directional valves, Walter Kidde & Co., Belleville, N. J., producer of carbon dioxide fire extinguishing equipment, has made it possible for a plant to police and protect several hazard areas on a 24-hour basis with a single source of extinguishing agent. In some plants as many as 25 separate hazard spaces have been protected with one cylinder bank. The supply source of the Multi-Space Fire Guard system comprises storage cylinders manifolded together for simultaneous discharge. The cylinder bank can be arranged in groups so that each of several hazards can be protected by an initial discharge group and a reserve discharge group of cylinders.

The system usually includes automatic controls to close windows, doors, and ventilating dampers in the fire area, sounds an alarm, and operates switches to shut off all electrical machinery. The system is also arranged for manual operation, both at the directional valves and at remote points.

(Please turn to page 256)

Davidson

RUBBER COMPANY
BOSTON 29 MASSACHUSETTS



WRITE FOR INDUSTRIAL CATALOG

INDUSTRIAL RUBBER PRODUCTS

Solid, hard or sponge rubber parts molded to customers specifications from natural, synthetic and reclaimed rubber

Davidson RUBBER COMPANY

Established 1837

BRIGHTON STREET Department 4 BOSTON 29, MASS.

STEEL CASTINGS



NEWS GETS AROUND: "IT PAYS TO CALL ON ATLANTIC"

Our 35 years' experience in producing quality steel castings . . . our facilities for making them in sizes from 5 to 15,000 pounds . . . our railroad siding that facilitates deliveries all combine to assure your getting top quality and prompt service when you order from Atlantic. Countless satisfied users will confirm.

Are you getting our house organ "Atlantic Axioms"? It's informative—write for it on your business letterhead, please.

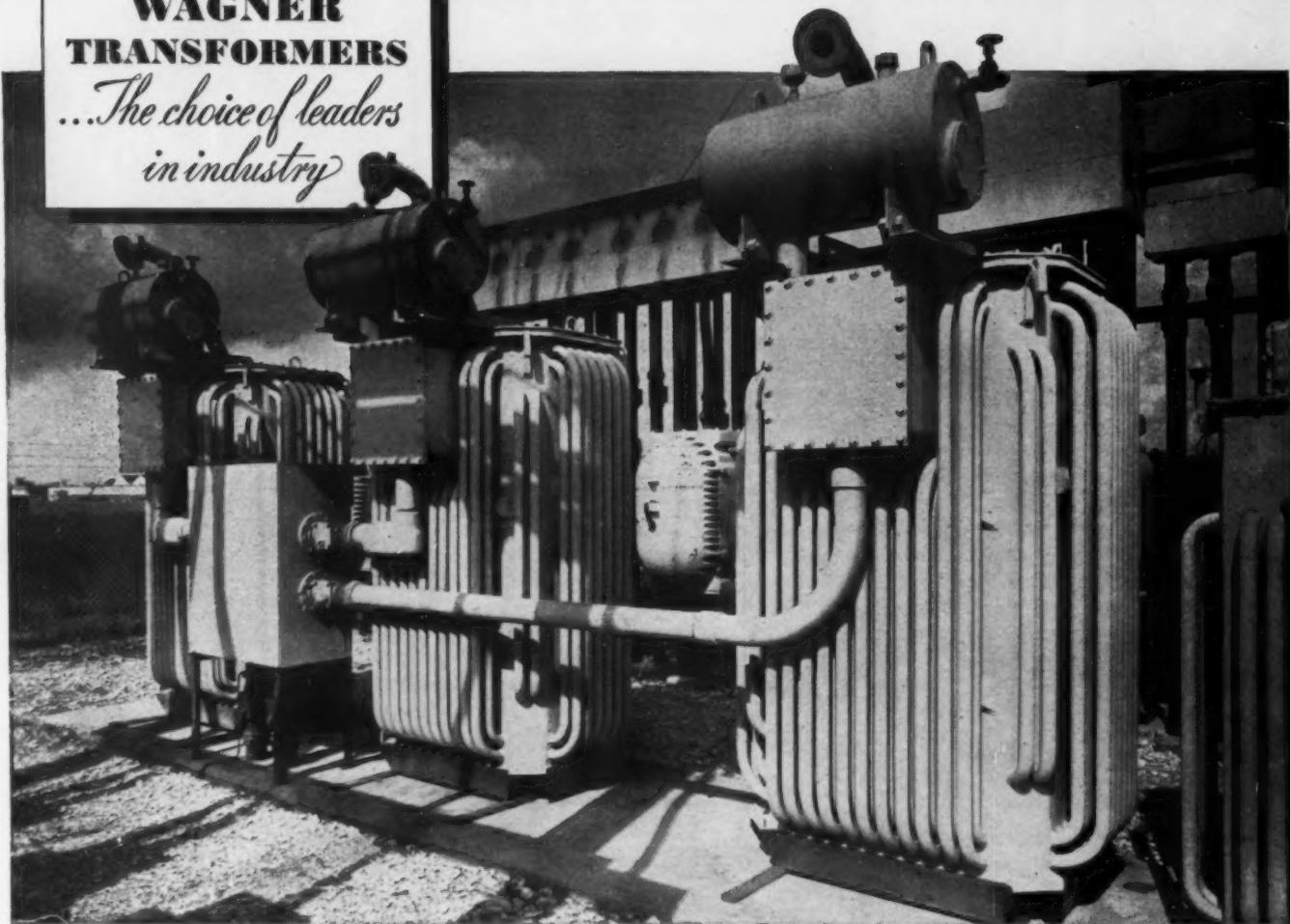


ATLANTIC
STEEL CASTINGS COMPANY

Sixth and Lloyd Streets Chester, Pa.
Chester 3-4181

WAGNER TRANSFORMERS

*...The choice of leaders
in industry*



Bank of 667 kva, 1 phase, 60 cycle, 2400 to 480 volt Transformers

Wagner Transformers power the production of Rohm & Haas "Chemicals for Industry"

Production of "Chemicals for Industry" by the Rohm and Haas Company, makers of famed Plexiglas, is not a simple one-plant operation. The products of one of their plants may have no resemblance to the commercial products into which they are integrated at another plant. The natural raw material found in Texas, for instance—the processed chemicals manufactured there—and Plexiglas, an end product manufactured in another plant—are all part of a great modern production chain.

Power for production—with Rohm and Haas as with any modern industry—is provided by electricity. The manufacture of chemicals in the Rohm and Haas plant in Deer Park, Texas, is powered by

Wagner Transformers and Wagner Motors. Wagner transformers in the main substation take energy at 69,000 volts and feed it to the low voltage substation at 2400 volts. The low voltage substation of Wagner transformers (illustrated above) in turn furnishes 480 volts to motors and to small air-cooled Wagner transformers which furnish 120 volts for lights and other single phase loads.

Thirty-one branch offices, located in principal cities, are ready to help you whenever you have a transformer problem. Users of Wagner Transformers also benefit by nationwide service facilities. Write for Bulletin TU-180 and TU-181 for full information on Wagner Power and Distribution Transformers.



WAGNER ELECTRIC CORPORATION
6360 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS • AIR AND HYDRAULIC

BRANCHES IN 31 PRINCIPAL CITIES

PAGE WIRE

**LOW CARBON
HIGH CARBON
STAINLESS
SPECIAL ALLOY
ARMCO IRON**

**ROUND
FLAT
OR
SHAPED**

**You draw the Shape
—Page can draw the Wire**

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to $\frac{3}{8}$ "; width-to-thickness ratio not exceeding 6 to 1.

**for Wire or
Information about Wire—**

*Get in touch
with Page!*

AMCO
Monessen, Pa., Atlanta, Chicago,
Denver, Detroit, Los Angeles, New York,
Philadelphia, Portland, San Francisco,
Bridgeport, Conn.

PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE



RESISTOFLEX CORP. TO PROCESS "TEFLON" AND "KEL-F"

Resistoflex Corporation, Belleville 9, N. J. announces it is now in a position to supply products and parts made from DuPont's "Teflon" and M. W. Kellogg's "Kel-F." Two of the newest synthetic polymers, these materials are known to possess extreme chemical inertness and excellent electrical and physical properties over a wide range of temperatures.

The superior chemical, thermal and electrical properties of Teflon and Kel-F should provide the answer to many difficult and special applications where the more familiar chemically resistant thermoplastics prove inadequate.

The company will supply extruded rods and tubing, molded sheets and mechanical shapes to a wide range of specifications. It states that the addition of these materials is in line with its specialization in the manufacture of flexible synthetic products to deal with chemicals and gases of a corrosive nature.

111

G. E. ANNOUNCES THREE NEW GLYPTAL RESINS

Three new glyptal alkyd paint resins have been announced by General Electric's Chemical Department, Pittsfield, Mass. These include a fast baking resin designated as 2522 for industrial finishes, 7300 for architectural finishes and 7310 for industrial finishes.

Glyptal resin 2522 is a fast-drying, hard tough resin that combines excellent adhesion and gloss and color retention, with chemical resistance, weather resistance, and flexibility. Suggested paint formulations include heat resistant paints for stoves, air-drying finishes for room interiors, general purpose paints for venetian blinds and related products, and home appliance paints for washing machines and refrigerators. It is compatible with amine resins, but for many applications their addition is not required.

Glyptal resin 7300 is a general purpose alkyd with improved gloss-retention designed for architectural applications including interior gloss enamels, furniture and exterior enamels.

Glyptal resin 7310, designed as a rapid, tough-baking vehicle for industrial type finishes, has excellent weather resistance, increased color retention, and is recommended for a wide variety of metal products including farm machinery, machine tools and gasoline pumps. It may also be used for air-drying enamels.

111

450-PAGE GIFT GUIDE

New 450-page 1951 edition of its annual catalog listing 7,000 products, which is characterized as an invaluable guide to users of gifts for customers, sales prizes, etc., is announced by L. & C. Mayers Co., P. O. Box 77, New York 1, N. Y. Copy is available on letterhead request.

(Please turn to page 258)



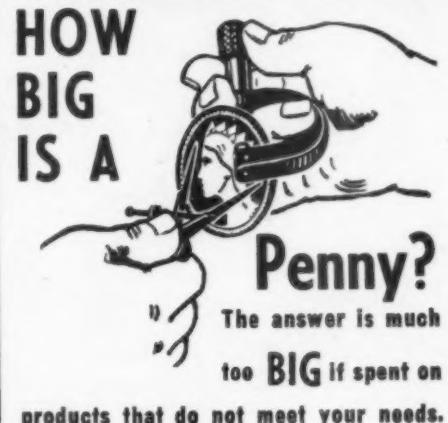
Herbrand
PRECISION

DROP FORGINGS

... any size or shape
up to 200 lbs.

Whatever your requirements
in forgings, Herbrand is your
most faithful source of supply
... as it has been for hundreds
of industries since 1881.
Your inquiries are solicited.

Herbrand DIVISION
THE BINGHAM-HERBRAND CORP.
FREMONT, OHIO



Specify STEINEN

- SCREW MACHINE PRODUCTS
- STAMPINGS Fibre-Phenolite-Metal-Plastic
- ASSEMBLIES Sub.—Complete
and save through better quality.

Send Us Your Inquiries

WM. STEINEN MFG. CO.

49 Bruen St.
M^Arket 2-5747



Newark 5, N. J.
Since 1907



ANOTHER CAN is added to the collection of samples taken from every manufacturing batch of 3M Adhesives, Coatings and Sealers.

NOT FOR SALE: the world's most valuable collection of adhesives, coatings, sealers

Each day we add little cans to the priceless collection on these shelves in our laboratories. These cans—thousands of them—contain samples from every single batch of adhesives, coatings and sealers we've manufactured. It is a growing collection, and a valuable one.

The collection is *valuable to us* because we test every lot of every product made before a single quart is shipped. We analyze these samples carefully to make certain each batch meets the rigid

specifications of the original formula. And we can re-check a batch as much as a year later.

This collection is *valuable to you*, too. You know the products you get from the 3M Company won't have costly variations in quality—whether we use one of over 1,000 basic formulas or tailor a special 3M product for you.

Write Dept. P-125 for your copy of "3M Adhesives • Coatings • Sealers." Use the coupon below for quick results.



MINNESOTA MINING & MFG. CO.
Adhesives and Coatings Division
411 Piquette Avenue, Detroit 2, Mich.

- Please send copy of booklet "3M Adhesives • Coatings • Sealers."
- Please have a 3M Field Engineer call.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

3M
BRAND

**ADHESIVES • COATINGS
SEALERS**

Made in U.S.A. by MINNESOTA MINING & MFG. CO., ADHESIVES AND COATINGS DIVISION, 411 Piquette Avenue, Detroit 2, Michigan. Also makers of "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-Slip Surfacing, "3M" Abrasives. General Offices: St. Paul 6, Minn. • General Export: Durex Abrasives Corp., New Rochelle, N. Y. In Canada: Canadian Durex Abrasives Ltd., Brantford, Ontario.



sleep's unaffected... his factory's protected

Worry! Fret! Loss of sleep thinking about fire cutting into production time... destroying valuable records... costing lives of employees... all are anxieties of the past when your factory's protected with modern, approved C-O-TWO Fire Protection Equipment.

For example, the new C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems keynote flexibility to meet your particular fire protection needs. Flammable liquids, electrical equipment, storage and manufacturing processes can all be made firesafe from a single low pressure carbon dioxide storage tank... capacities range from one to fifty tons of fire killing carbon dioxide. If fire should strike the fast-acting, non-damaging, non-conducting carbon dioxide extin-

guishes the blaze in seconds... no water damage, no lingering odors.

Further, when a C-O-TWO Smoke or Heat Fire Detecting System is used in combination with a C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System, the first trace of smoke or spark of fire in a protected area immediately sounds an alarm... then the fire quenching carbon dioxide is readily released into the threatened area.

So, whatever your fire protection problem, let an expert C-O-TWO Fire Protection Engineer help you in planning complete and up-to-date fire protection facilities now. Write us today... tell us about your particular fire hazards, our experience is at your disposal... no obligation of course.



C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada
Affiliated with Pyrene Manufacturing Company

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

STAINLESS STEELS IN TEXTILE INDUSTRY

"Making the Most of Stainless Steels in the Textile Industry" is the title of a 32-page booklet just issued by the Crucible Steel Company of America, 405 Lexington Avenue, New York, N. Y. It details the advantages of the family of stainless steel types the company has developed for use in textile mills, pointing out that the various types are readily weldable, free-machining, corrosion resistant, and that they can be economically formed and bent. Textile mills operations are reviewed to illustrate where savings currently are being effected through the use of stainless equipment. Properties of stainless types for textile uses are shown and advice is given on selection of the right grades. Copies of the booklet are available to purchasing agents, operators, maintenance men and others in the textile and textile equipment fields.

TRIFLUOROCHLOROETHYLENE INJECTION MOLDING

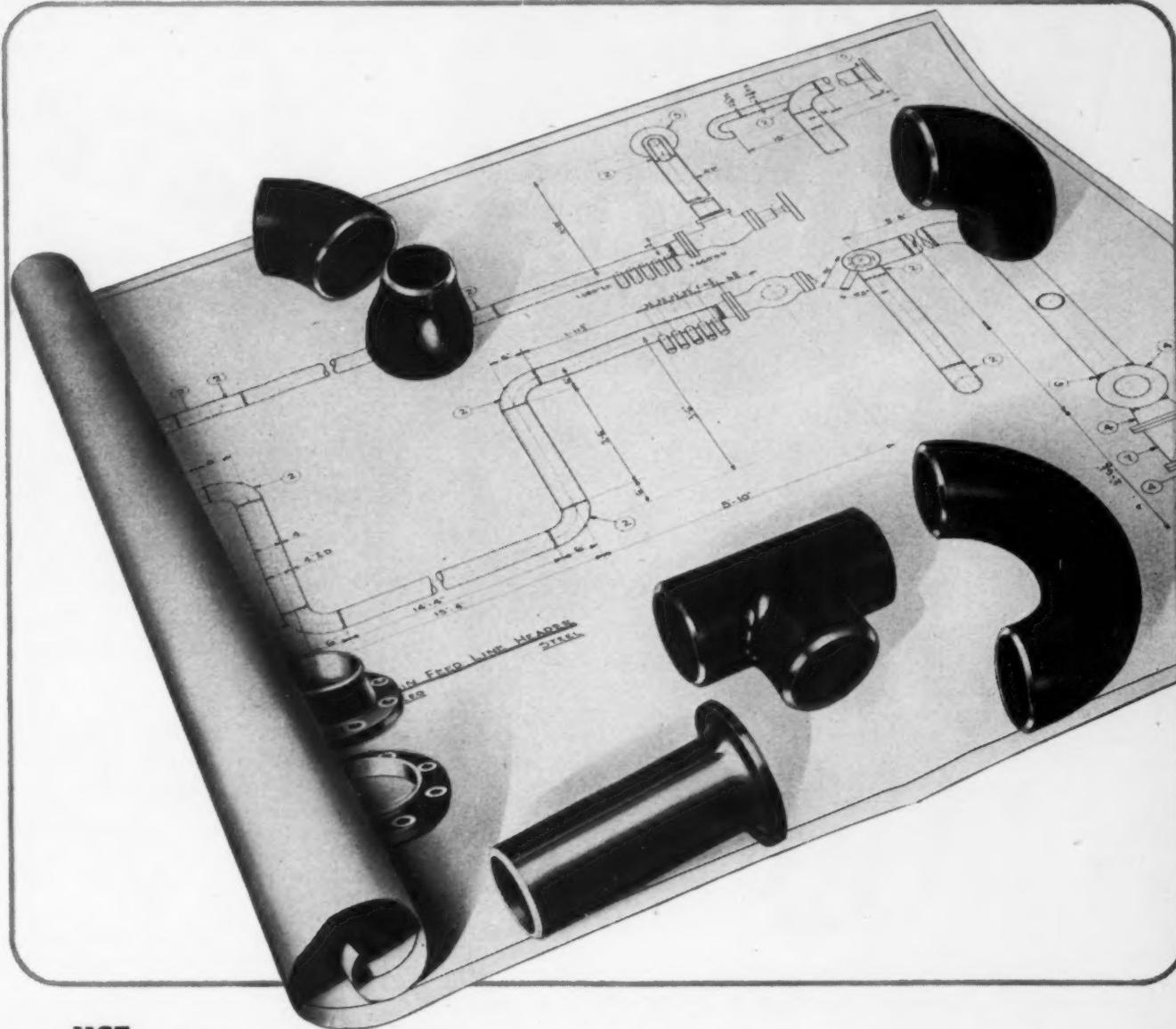


The accompanying illustration shows electronic tube base measuring a little more than two inches in diameter and nearly three-quarters of an inch in depth, which was injection molded by the American Molding Company of San Francisco of Kel-F—new polymer of trifluorochloroethylene. It is ready for use when taken from the mold, requiring no machining even for the narrow slots which hold contact clips in position in the final assembly. Kel-F was selected for this component because of its resistance to high temperatures, its good mechanical properties, high dielectric strength and ready moldability.



"WHAT WISE GUY'S BEEN MONKEYING WITH THIS TEMPERATURE RECORDER?"
COURTESY WHEELCO INSTRUMENTS COMPANY

TO DO A BETTER PIPING JOB . . .



USE . . .

GLOBE PRECISION PROCESS SEAMLESS WELDING FITTINGS

When you specify and use Globe Welding Fittings you have the product of an organization with unusually broad metallurgical experience. Globe's precision-process method of production reaches back to the manufacture of the Globe seamless tubes themselves which are the "raw material" of Globe welding fitting fabrication.

GLOBE STEEL TUBES CO., Milwaukee 4, Wisconsin
Chicago • Minneapolis • Cleveland • Detroit • New York • Philadelphia
St. Louis • Tulsa • Houston • Denver • San Francisco • Glendale, Cal.

Producers of Globe seamless stainless steel tubes — Gloweld welded stainless steel tubes — carbon — alloy — seamless steel tubes — Globeiron seamless high purity ingot iron tubes — Globe Welding Fittings.



Send for the *Globe Welding Fittings Catalog*—and look to *Globe* as a preferred source of supply.



Every Bay State Spiral Point is of exceptional accuracy. Special machines of unusual design control this detail with precision—another reason why Bay State Taps produce so many holes and still cut close to size.

**BAY STATE TAP & DIE COMPANY
MANSFIELD, MASS.**

On nearby shelves of Industrial Supply Distributors

PLASTIC PIPE AVAILABLE IN THREADED SECTIONS

Development of new plastic pipe which is furnished in threaded sections together with molded plastic fittings, is announced by Carlon Products Corp., 10333 Meech Ave., Cleveland, Ohio. The new pipe, designated as "TL" is furnished in 20 ft. lengths and incorporates standard international pipe threads. It can be threaded and cut in the conventional manner with



Carlon "TL" can be threaded and cut with standard pipe-fitting tools.

standard pipe-fitting tools. Furnished in standard pipe diameters from $\frac{1}{4}$ to 2 inches, it is recommended for handling fluids and gasses of all types. It features extreme light weight — approximately 1/9th the weight of steel, easy fabrication, and complete immunity to rot, rust and electrolytic erosion. A complete line of plastic ell's, tees, adapters, plugs, etc., is available. Carlon "TL" pipe is recommended for working temperatures up to 140 deg. F. only.

ONE-COAT MULTI-COLOR FINISH INTRODUCED BY UNITED LACQUER

The world's first multi-color finish, which makes it possible to apply two or more colors in a single coat, was announced recently by the United Lacquer Manufacturing Corporation, Linden, N. J.

The new enamel, called MultaColor, will sell at prices comparable to one-coat enamels. Its evenly-distributed colors produce an attractive broken surface effect. In laboratory test runs, MultaColor has been used effectively to give a many-colored finish to furniture, toys, pencils, book cases, filing cabinets, broom handles, ladders and many other items. Brown-and-white and black-and-white MultaColor is being used to give a marbelized finish to coffins.

The new enamel may be applied with good results to porous materials, such as various composition boards, wallboards, beaver board and asbestos board.

It will be available initially in 16 color combinations, but it may be prepared in an infinite variety of others. Some of the standard combinations are: brown-and-white, tan-and-white, green-white, light blue-dark blue, pink-white, and green-white.

MultaColor is time-saving and economical because it eliminates as many as four steps from now-standard finishing

(Please turn to page 262)



New Britain
Specialty Co.

From-
Rubber Garter Buttons

To-
Rubber Tobacco Pouches



Rogers
"Air-tite" Tobacco Pouch



From garter buttons to tobacco pouches . . . from automotive, aircraft, electrical, radio and home appliance parts to safety equipment, diaphragms, boots, sealing rings and novelty items — these are but a few of the countless precision-molded rubber parts we have produced in our extensive, modern plant in large and small quantities for manufacturers throughout the country.

Fully equipped with every modern facility, ACUSHNET designs, compounds and precision molds natural or synthetic parts to the most exacting specifications.

Send for the Acushnet Rubber Handbook
on your business letterhead.

Background illustration:—a "heat" of rubber garter buttons produced in a multiple mold. Button and strip is cut for attachment to garter.

ACUSHNET
PROCESS CO.
New Bedford, Mass., U.S.A.
Precision-Molded RUBBER Parts & Products

Specialized Wire for Specialized Products



This new wire developed by Keystone helps recessed head screw manufacturers to lower production costs. It delivers the desired forming and upsetting qualities uniformly. Because of excellent flow properties — die and plug life are often more than doubled — production records show fewer rejections and reduced inspection time. Keystone Cold Heading Wire is "special processed" for tough Cold Heading jobs.

GALVANIZED MB SPRING WIRE

Keystone's process of *drawing after galvanizing* smooths and hardens the zinc coating, increasing its lasting qualities and its physical properties. This shiny smooth finish, corrosion resistant Spring Wire is now available in Type 2 and Type 3 heavy weight zinc coating as well as the regular weight suitable for most applications.

If your product requires "special" steel wire, please consult us.



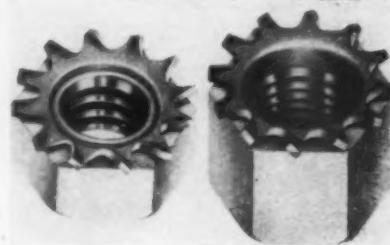
(Continued from page 260)

operations, United Lacquer points out. A primer coat is necessary only when the new enamel is used on metal.

The new enamel may be applied by the dip or spray technique, even to wet surfaces. It is available in flat, semi-gloss and gloss.

SHAKEPROOF ANNOUNCES KEPS NEW FASTENING INVENTION

New fastening invention named Keps, pre-assembled nuts and Shakeproof lock washers, designed to make assembly operations easier and to assure tighter, stronger connections, is announced by Shakeproof, Inc., Division of Illinois



The two parts are handled as one to eliminate costly hand operations

Tool Works, 2501 North Keeler Avenue, Chicago, Ill. Keps extend all the advantages of the principle of pre-assembly to nut applications. The two parts are handled as one to eliminate many hand operations. Other advantages include easier starting and driving, simplified ordering and stocking, and tighter fastenings.

GE INAUGURATES TRAINING PROGRAM FOR CHEMICAL SALESMEN

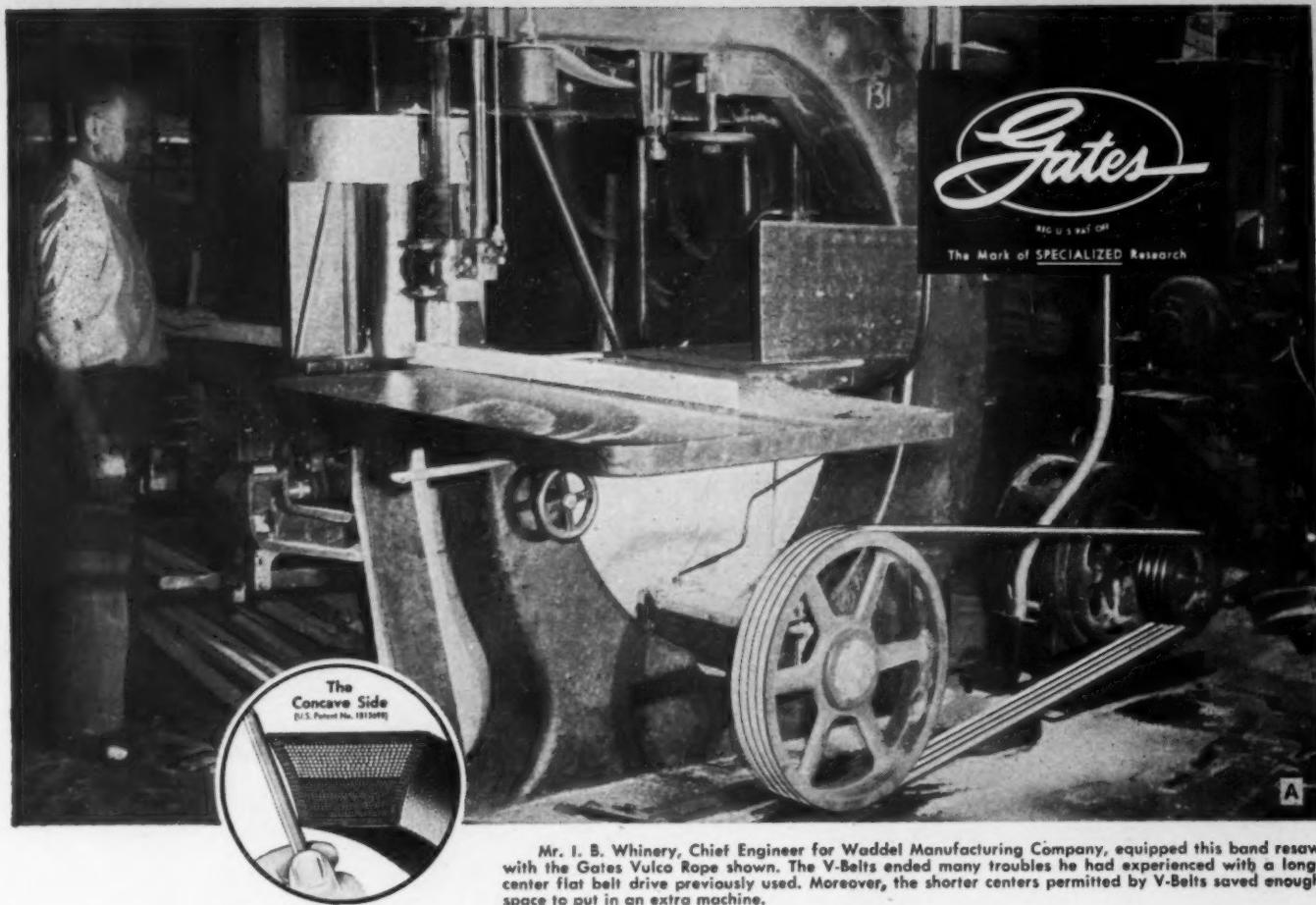
A new sales training program designed to develop chemical salesmen, has been announced by General Electric's Chemical Department, Pittsfield, Mass., which operates eight chemical plants producing resins, plastics, silicones, and electrical insulation.

Howard L. Franks, Manager of sales personnel and control for the Department, stated that basic indoctrination in marketing principles and sales techniques, especially intended for the chemical industry, will be stressed. Salesmen will be trained, he said, to work with customers from the inception of the idea, regardless of whether it is a product, a formulation, or an application, through to the ultimate sale and delivery of goods.

Candidates will be considered with little or no sales experience, Mr. Franks stated. All candidates, however, must be technically trained and have the desire, ability, and personality to become a salesman.

The training program will cover a period of from one to two years and will be divided into nine parts including training in marketing, general technical work, products, field and divisional sales, and a period devoted to actual selling.

(Please turn to page 264)



Gates

REG. U. S. PAT. OFF.
The Mark of SPECIALIZED Research

Mr. I. B. Whinery, Chief Engineer for Waddell Manufacturing Company, equipped this band resaw with the Gates Vulco Rope shown. The V-Belts ended many troubles he had experienced with a long-center flat belt drive previously used. Moreover, the shorter centers permitted by V-Belts saved enough space to put in an extra machine.

If you want LOWER V-BELT COSTS, just make this simple test!

Just pick up any V-Belt and bend it—exactly as it bends when going around its pulley—and see what happens!

The top of the belt is put under tension; hence it grows narrower. The body of the belt is under compression and bulges out.

This change of shape, due to bending a straight-sided V-Belt, is shown in figures 1 and 1-A. Note how the bulging sides are forced to press unevenly against the V-pulley. This naturally causes uneven wear on the sides—concentrated wear where the bulge is greatest.

Now look at figures 2 and 2-A. There you see how the bending changes the shape of the V-Belt that is built with the Concave Side—the Gates Vulco Rope. The precisely engineered concave side of this belt merely fills out and becomes perfectly straight. There is no side-bulge. This belt, when bent, precisely fits its sheave groove.

Because there is no bulging, the sides of the Gates Vulco Rope always press evenly against the V-pulley and therefore wear uniformly—resulting in longer belt life and lower belt costs for you.

Only V-Belts made by Gates are built with concave sides. Whenever you buy V-Belts, be sure that you get the V-Belt with the Concave Sides—The Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt



How Straight-Sided V-Belt
Bulges in Sheave-Groove. Sides
Press Unevenly Against V-Pulley
Causing Extra Wear at Point
Shown by Arrows.

Gates Vulco Rope
with Concave Side



The Concave Side Fills Out to a
Precise Fit in the Sheave Groove.
No Side Bulge! Sides Press
Evenly Against the V-Pulley—
Uniform Wear—Longer Life!

CS-5011

GATES VULCO ROPE DRIVES
IN ALL INDUSTRIAL CENTERS

Engineering Offices
and Jobber Stocks

of the U.S. and 71
Foreign Countries

THE GATES RUBBER COMPANY
DENVER, U.S.A.

The World's Largest Makers of V-Belts

"THINK 7 TIMES BEFORE YOU PICK *CHEAPEST WAY TO SHIP!*"

"Cheapest way to ship" means more than rates alone. Before my customers pick their cheapest way, they think of these 7 features . . .



It's knowing the importance of these 7 things — and getting them — that makes my customers pick REA as their "Cheapest Way To Ship."

says Jim Cole, San Francisco
13 years an Express Man

ALWAYS ASK
.....
THE EXPRESS MAN!



WASH FOR REMOVING RADIOACTIVITY FROM CONTAMINATED SURFACES

A general purpose solution for removing radioactivity from contaminated surfaces, known as Radiacwash, is announced by Atomlab, 489 Fifth Avenue, New York, N. Y. As the result of tests conducted at The College of the City of New York and The University of Connecticut before audiences of scientists, educators and military and civilian officials, in which Radiacwash was tested to compare its decontaminating effects with the strong soap and detergent methods heretofore used by most radiochemical laboratories, the validity and superiority of Radiacwash are said to have been proved.

Several radiochemical contaminants were used to contaminate a variety of surfaces. In all instances, the new wash is said to have reduced the contamination more rapidly and from 2 to 30 times lower than the level obtained by washing with other commonly used solutions. It is stated that it has performed successfully on the types of contaminants likely to be found after an atomic catastrophe.

In developing the wash, in view of the fact that no decontaminating agent is 100% effective, the aim was to reduce radioactive contamination to a safe biological level, a task which the new wash is claimed to perform efficiently and safely. A dilution of five parts and one part Radiacwash is said to be effective and safe for the hands and other skin surfaces. The material is said to be equally effective in either hard or soft water, to have long shelf life, and to be unaffected by heat or cold.

* * *

SIX NEW SPECIFICATION SHEETS FOR MOTIVE POWER BATTERIES

The Gould Storage Battery Corporation, Trenton, New Jersey, announces six new data sheets which help specification engineers and purchasing agents to select the correct motive power batteries for industrial trucks and for mine locomotives and shuttle cars.

The specification sheets cover the following six rubber jar batteries: (1) Standard Height Kathanode KMZ, 136 to 680 ampere hours at the 6 hour rate, (2) Standard Height Extra Capacity Kathanode KTZ, 160 to 800 ampere hours at the 6 hour rate, (3) High-Type Extra Capacity Kathanode KHZ, 220 to 110 ampere hours at the 6 hour rate, (4) Extra High Kathanode KRZ, 400 to 1500 ampere hours at the 6 hour rate, (5) Standard Height Extra Capacity "Thirty" KVLZ, 160 to 800 ampere hours at the 6 hour rate, and (6) High-Type Extra Capacity "Thirty" XLZ, 220 to 1100 ampere hours at the 6 hour rate.

Each specification sheet includes a cut-away illustration showing battery components and a series of capacity curves from which a battery may be selected

(Please turn to page 266)

Whenever you use it...



...Chase sheet brass is always the same—*always best!*

No matter what type of brass, bronze or other copper alloy you use—you'll find that Chase metal, in flat sheets, strips or rolls, *always* means the same superior metal with uniform gauge, temper and color. Month after month, Chase produces the same quality sheet with clean, flat surfaces, specified widths and straight, smooth edges.

Chase copper alloy sheet and strip are made in 18 different alloys, covering a wide range of physical properties. There is a color, gauge, and temper to meet every need.

We're sorry that present day copper shortages make it impossible to fill all orders and maintain our topnotch service at all times.

Chase

WATERBURY 20 CONNECTICUT



the Nation's Headquarters for
BRASS & COPPER

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK ... handiest way to buy brass

ALBANY ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT HOUSTON INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE
MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY (Sales Office Only)

LARGE INDUSTRIAL GEARS



Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS

up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

THE
SIMONDS

GEAR & MFG. CO.
LIBERTY at 25th • PITTSBURGH 22, PA.

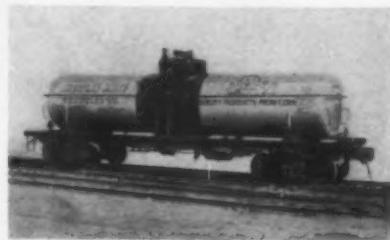
(Continued from page 264)

according to the power it must deliver and the length of time it must supply this power. Specification data includes information on plates, separators, retainers, jar, cell cover, and televac vent plugs. The televac vent plug is a transparent plastic cap which permits maintenance men to determine whether water must be added without removing the cap.

Each sheet concludes with a table listing the battery sizes for the particular battery model to which the sheet pertains. The ampere hour capacity and the kilowatt hour capacity at both the 6 and 8 hour rates of discharge are given for each battery size. In addition, cell dimensions and shipping weight are given. The new specification sheets can be obtained by writing to the Gould Storage Battery Corporation, Trenton 7, New Jersey.

1 1 1

HUGE FOUR-COLOR DECALCOMANIA AND LETTERING APPLICATION



The accompanying illustration shows one of the largest sets of four color decalcomania and lettering ever produced, recently made by the Meyercord Co., Chicago, for the American Maize Products Company. The huge decals were made for identifying the company's more than 500 tank cars, and were applied at a fraction of the handpainting time and cost. The decals were specially designed to adhere to the rough tank car surface and are waterproof, colorfast and permanent.

1 1 1

ACUSHNET BOOKLET ON PRECISION MOLDED RUBBER PARTS

Plastic bound, 32 page, generously illustrated booklet, styled the "Rubber Data" handbook has just been issued by the Acushnet Process Co., New Bedford, Mass., manufacturers of precision-molded rubber parts and products for a widely diversified industrial market.

Acushnet products are not stocked. All are made to order, and following description of the plant and equipment, the handbook describes and illustrates numerous products made by Acushnet such as automotive parts, electrical and radio parts, aeronautical parts, appliance parts, rubber-to-metal bonded parts, silicone rubber parts, boots and bellows, diaphragms, "O" rings and seals, safety equipment, toy and novelty items and others.

(Please turn to page 268)

Goes to the SOURCE
of BAD SMELLS!

F & E DISINFECTS WHILE DEODORIZING

F & E kills many types of bacteria which cause disgusting odors. At the same time it transforms noxious vapors into a pleasant agreeable atmosphere tinged with the invigorating scent of eucalyptus.

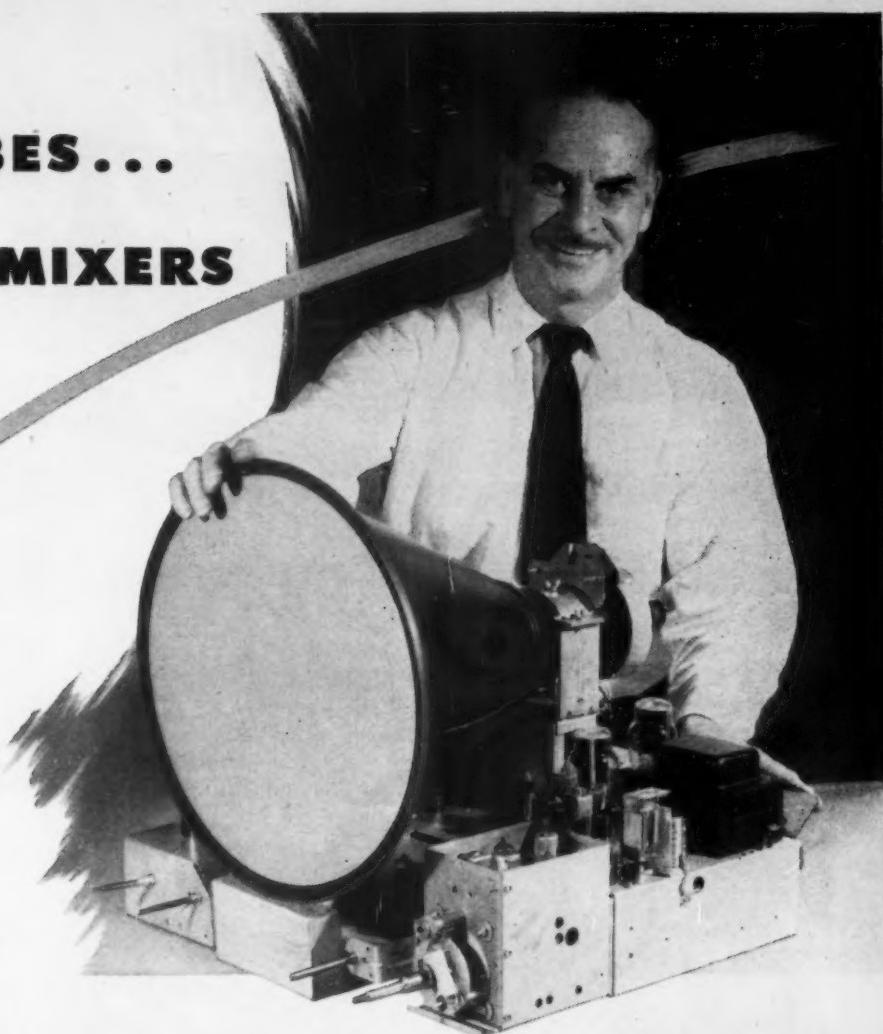
Use F&E Solution

around toilets and urinals
... for flushing garbage receptacles and sick room accessories ... for dressing room benches and lockers
... wherever agreeable, high-speed deodorization is required.

Write for Folder FE-F745

DOLGE
Dependable
WESTPORT, CONNECTICUT

FOR TV TUBES... AND MIGHTY MIXERS



Remember: ENDURO is not just one, but a family of metals, each with certain qualities that make it best suitable for a specific use.



Distributor stocks and competent fabricators are located in principal cities. Your local Republic representative is prepared to answer your questions.

Enduro STAINLESS STEEL



RUST-RESISTANT • CORROSION-RESISTANT • HEAT-RESISTANT • ATTRACTIVE • SANITARY • EASY TO CLEAN
EASY TO FABRICATE • STRONG • LONG-LASTING • LOW IN END COST • What more can be desired in a material?

REPUBLIC STEEL CORPORATION • Alloy Steel Division, Massillon, Ohio • GENERAL OFFICES, CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



vital productive strength



flows through
your
LUNKENHEIMER
iron valves



Fig. 1430

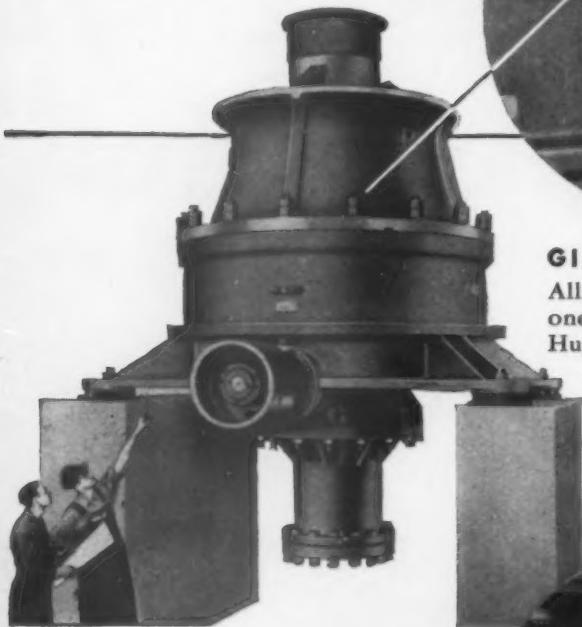
IRON • STEEL • BRONZE

LUNKENHEIMER
THE ONE *Great* NAME IN VALVES

L-1150-8

How they're using LOK-THRED

for Positive Locking
... Greater Strength



GIANT ROCK CRUSHER

Allis-Chalmers' "Hydrocone", one of the largest of its kind. Huge 3" by 16½" LOK-THRED

studs are standard to insure positive locking action and extra strength under the severe strains and vibrations to which this unit is subjected.



MERCURY OUTBOARD MOTOR

Made by Kiekhaefer Corporation. Three small LOK-THRED studs, ¼" by 1½", secure handle to engine proper. Since the handle also serves as a throttle and connects with other integral mechanisms, secure attachment is vital for safe and efficient operation.

★
LOK-THRED may be had in ANY size stud, bolt or screw. Write for new LOK-THRED booklet.

★



THE NATIONAL SCREW & MFG. COMPANY

Cleveland 4, Ohio

(Continued from page 268)

the new process has shown itself to be equal to, or better than, that achieved through normal color photo-processing methods.

Photographic Laboratory engineers point out that the new process will considerably reduce the delay which now exists between the time the pictures are taken by photo airplanes and the time they are ready for inspection by photo interpreters. This time factor is of considerable importance from a military standpoint. *Martin Star.*

111 PAPER COVERS FOR BARRELS AND DRUMS PROVE ECONOMICAL

Barrel and drum covers made of tough neoprene-impregnated paper have been introduced by Chase Bag Company, 309 W. Jackson Blvd., Chicago. The use of these covers, where barrels and drums are used to handle material in process, has proved to be an efficient and economical means of guarding the contents against rain or unwanted particles. The idea was developed in a chemical plant which now uses thousands of them to



keep intermediate chemicals clean and dry during temporary storage or within-the-plant shipping. Being manufactured from special paper—heavy, creped kraft containing a small percentage of neoprene synthetic rubber—the covers are made by combining neoprene latex with paper pulp at the paper mill. Thus intimately incorporated, the neoprene adds greatly to the finished paper's wet strength and imparts resistance to sunlight, oils and chemicals.

The cover has a round top, the diameter size of the barrel, to which is stitched a short skirt hemmed with an elastic band around the bottom edge. When slipped over the top of a barrel or drum, the elastic holds it firmly in place.

At the chemical plant mentioned, it is regular practice to let barrels and drums stand outdoors; rainwater collects in the paper covers and stands for days without evidence of water seepage reaching inside the container. This plant had been using wooden barrel heads and metal drum lids to cover intermediates, but have since found the paper covers to be more economical even if used only once. Actually they can be used four or five times. The economy has two sources; the paper covers are inexpensive in the

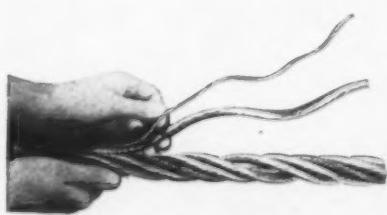
(Please turn to page 272)

Form-Set Wire Rope

now costs very little more
than the non-preformed type



Unseized Form-Set rope. Not a single wire has become unlaid after cutting. This absence of wildness makes Form-Set easy to handle.



Another demonstration of "no wildness." A strand and one of its wires have been lifted out of place; the others lie undisturbed. There are no inner forces to make the rope touchy.

We want everybody to know that Bethlehem Form-Set rope (preformed) is now almost as low in price as the conventional, non-preformed kind. We want everybody to know that the advantages of Form-Set rope are available at so little extra cost.

What are these advantages? Here's what thousands of users have found:

- ★ Form-Set rope has little or no internal tension . . . because the wires and strands are preformed, given their permanent shape, before being laid in the rope. Hence the wires have no urge to spring apart, even when cut.
- ★ This absence of tension means that the rope has high resistance to bending fatigue. It lasts longer on applications where bending fatigue is a serious factor.
- ★ Absence of tension also means better spooling, far less kinking.

These are a few of the major points, and they are important. Many, many users have always considered Form-Set rope an excellent investment, even at the old price differential. Now it costs so little more than non-preformed rope that it suits almost everybody's pocketbook.

If you haven't been quoted on Form-Set recently, ask for details today. Then try a reel. You'll find we aren't talking through our hats!

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



When you think WIRE ROPE... think BETHLEHEM

POWER Wherever You Turn!

This
WISCONSIN
HEAVY-DUTY
Air-Cooled
ENGINE
Mounts on
the Steering
Wheel!



Moving 4000 lbs. at a snail's pace or up to 8 mph. and maneuvering into any corner the truck will fit . . . all at a cost of one gallon of gas per 8 hour shift is the record of this Wisconsin-powered Hyster Salsbury Turret Truck, made by The Hyster Co., Portland, Ore.

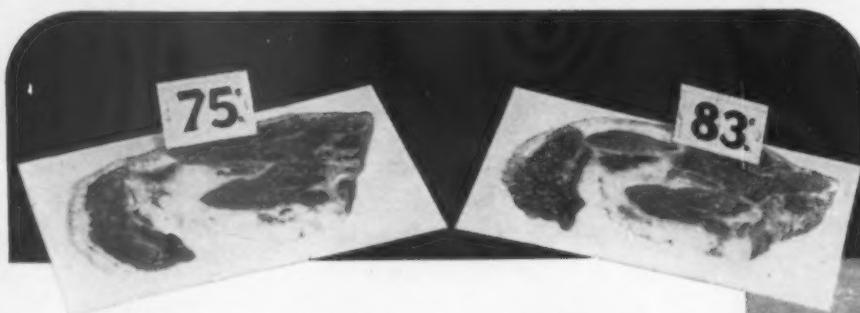
New and unusual industrial service units are being introduced by manufacturers every day, to which Wisconsin Engines are assigned as the logical power choice. Wisconsin Engine features such as snug compactness, light weight, heavy-duty construction, tapered roller bearings at both ends of the crankshaft, fool-proof air-cooling at all seasons, and an easily serviced OUTSIDE magneto, with impulse coupling for quick starting . . . combine to give Wisconsin Engines preferential ratings as power components on a great variety of original equipment in many fields.

4-cycle, single-cylinder, two-cylinder, and V-type 4-cylinder types, 3 to 30 hp. Your inquiry is invited.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



They are both steaks But!

THERE IS A DIFFERENCE

Flavor, tenderness and the amount of waste determines the true worth of a steak. Speed of application, strength of base stock and glue bond, economy in use determine the true value in gummed tape.

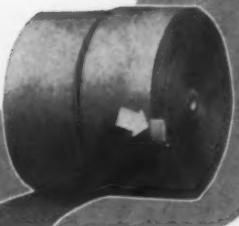
The Safetex cracked glue surface, the special penetrating glue and select base stock guarantee speed and strength. The "carton-pack" and "pull-tab opener" assure economy.

Safetex is your best buy.

CENTRAL PAPER CO., MENASHA, WIS.

USE GUMMED TAPE! No other closure does so much for so little.

SAFETEX
GUMMED TAPE



(Continued from page 270)

first place (20-22 cents apiece) and are easily attached and removed. Wooden barrel heads and metal lids, costing three or four times as much, require considerably more time for the application and detachment procedures.

At present the paper covers are made in only one style—to fit a standard 55-gallon drum or barrel. They are single ply, two feet in diameter with four inch skirts. If demand warrants, other sizes and shapes will be made—rectangular for instance, to cover trays, boxes or other containers of various sizes and shapes.

↑ ↑ ↑

INHIBITORS ADDED TO DISTRIBUTION TRANSFORMER OIL

Inhibited insulating oil is now standard in all Westinghouse Electric Corporation pole-type distribution transformers 100 kva and smaller and 15 kv and below. Addition by the manufacturer of excellent synthetic inhibitors now available greatly increases oxidation resistance of Wemco-C oil used in these transformers. Life of the oil is more than trebled.

Addition of these inhibitors in no way affects electrical characteristics of Wemco-C oil. Inhibited Wemco-C will mix with other good inhibited oils. When mixed with uninhibited oils or used oils, life would be decreased by dilution of the inhibitor and by the oxidation products already present. While synthetic inhibitors are removed to a slight degree by filtering through such agents as activated carbon, clay, alumina, and silica gel, a moderately refined base oil such as Wemco-C would retain the major part of its natural inhibitors and still show its usual long life.

For further information write Westinghouse Electric Corporation, P. O. Box 2099, Pittsburgh 30, Penna.

↑ ↑ ↑

DESIGN BOOKLET PUBLISHED BY STEEL FOUNDERS SOCIETY

Recognizing the paramount importance of correct design to assure satisfactory service and economical production of steel castings, Steel Founders Society of America, 920 Midland Bldg., Cleveland, Ohio, has published a new booklet "Fundamentals of Steel Casting Design." Prepared as part of the Society's educational program, the booklet comprises a thorough, 32-page primer of fundamental practices useful to designer and foundrymen alike. Emphasis is directed particularly to considerations looking to reduced production costs, elimination of unnecessary weight, improved casting quality and castability.

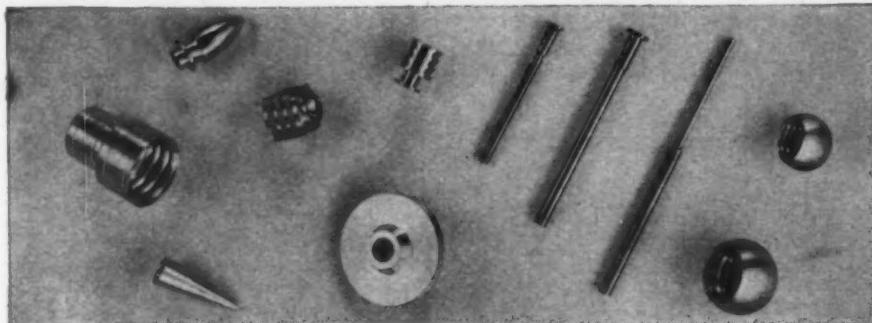
More than 50 photographs, drawings, charts and tables are included with the 32-page text, many concerned with recent developments. Copies of the booklet may be obtained from F. Kermit Donaldson, Executive Vice President, Steel Founders Society of America, 920 Midland Bldg., Cleveland 15, Ohio. The price is 20¢ per copy.

(Please turn to page 274)

COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" Headquarters for BRASS, BRONZE and COPPER



Brass and Bronze Screw Machine Parts — Courtesy Thomaston Manufacturing Co., Thomaston, Conn.

Screw Machine Parts Skived To Eliminate Cost of Buffing

The excellent machining characteristic of leaded brass rod, plus correct tooling, has enabled screw machine shops to help manufacturers cut the cost on finishing by obtaining surfaces which often do not require buffing and coloring before plating.

The spherical parts, illustrated in upper right, are produced with a finish high enough to take gold plate without buffing operations. A tungsten carbide skiving tool was used. Since the skiving tool removes all the stock, the original high speed steel tool had to be resharpened about every four hours. The carbide tool now gives more than a day's service without re-grinding. The dwell of the skiving tool is longer than the usual forming tool to permit burnishing.

The front clearance angle on the tool is approximately 23°. The skiving tool was highly polished on a diamond wheel to insure clean cutting.

Carbide Support Used

The three long thin parts, grouped second from right, produced a considerable problem until a carbide V-support block was used to run ahead of the box turning tool. The longest part is more than 3" long and of $\frac{1}{8}$ " diameter

phosphor bronze. The turned diameter is 0.096" and $1\frac{3}{4}$ " long.

The two adjacent pieces were produced in the same manner. However, a good finish on the larger diameter was required. It was necessary to stop the spindle on withdrawing the box tool to prevent the V-support from burnishing the supporting diameter in the form of a corkscrew due to the rapid withdrawal of the turret.

The end cutting edge angle of the box tool was kept almost to zero so that there would be a burnishing action. The tool was tungsten carbide.

The pieces in the upper left indicate to some degree what can be done with hex and square rod in a screw machine.

The large part to the left has a modified square thread, six to the inch. The drills and forming tools are left hand. The threading was done at one-third turning speed, but the tap was withdrawn with the high speed turret return and part cut off. The shallow grooves were produced by grinding a broad forming tool.

Pencil Tip Also Skived

The pencil tip just below this part was also skived while four drills were at work. It was also found necessary to

drill the 0.015 dia. hole while finishing up on the skiving. The back slide was used to cutoff.

The large pulley-like part is 1.125" in diameter, 0.250" thick through the hub section and 0.125" through the thinner section. A combination form tool and cutoff was used, then the work fed out, faced, hole drilled and counterbored and groove cut. Carbide forming tool and cutoff were used.

Original Cost Offset

The original cost of tungsten carbide tools is considerably above that of high speed steel. However, in balancing out costs on the overall picture, carbide tools show the way on moderate to long-run jobs. As an example, speeds practically double that for high speed tools are possible, life of the tool between grinds can be figured quite often in days rather than hours and the finish on the part is generally improved.

The cost of diamond finishing wheels for carbide is also greater than that for high speed steel. But, here again, careful instruction for the person doing the grinding will pay dividends when using diamond wheels on carbide. With two grades of roughing wheels, not diamond, it is possible with care to bring the polish up on the carbide tool to a point where very little work is left for the diamond wheel.

There is often a tendency on the part of the tool grinder to leave too much roughing work for the diamond finishing wheel. This not only causes the diamond wheel to wear faster, but takes considerably more time than doing the work on a roughing wheel.

Bridgeport's free machining brass rod (Ledrite 6) gives the highest results in machinability, good finish and strength. The ability of brass to take and retain a plate with a minimum of effort as well as its high corrosion resistance, makes it an ideal material for plated articles of all types. For information and guidance on Bridgeport alloys, contact our nearest sales office.

BRASS • BRONZE • COPPER • DURONZE — STRIP • ROD • WIRE • TUBING

MILLS IN
BRIDGEPORT, CONNECTICUT
INDIANAPOLIS, INDIANA

In Canada:
Noranda Copper and Brass Limited,
Montreal



BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONNECTICUT

Established 1865

BRIDGEPORT® District Offices and Warehouses in Principal Cities

CAMPBELL CHAIN

takes the strain . . .

Every link in every Campbell chain is rigidly inspected to make sure your order measures up to the high standards of quality traditional with Campbell.

Campbell distributors can give you prompt service. And our plant is set up to handle your special requirements with dispatch and accuracy. When you need dependable chain, let Campbell Chain take the strain.

Write for your copy of the latest
Campbell Chain Catalog.

CAMPBELL CHAIN *Company*

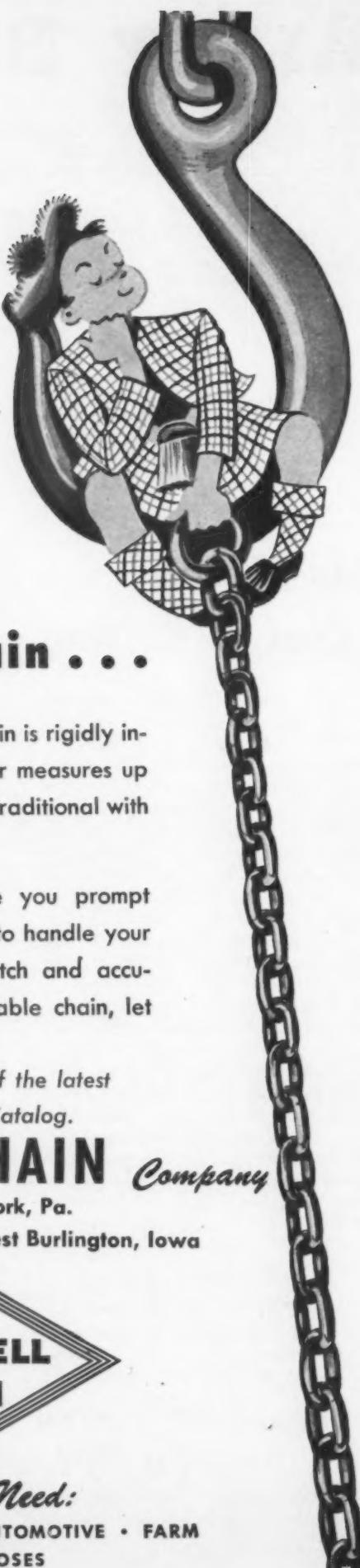
Main Office—York, Pa.

Factories—York, Pa. and West Burlington, Iowa



For Every Need:

INDUSTRIAL • MARINE • AUTOMOTIVE • FARM
SPECIAL PURPOSES



SHOP ASSEMBLED BOILER FOR SMALL PLANTS

A complete shop-assembled boiler, ready to place, hook up and operate, is announced by the Babcock & Wilcox Company, 85 Liberty St., New York N. Y. Developed to reduce the cost and time of installation work, the new boiler, shop assembled for unit shipment, meets a definite need in both small and large establishments such as industrial and processing plants, office buildings, institutional buildings, etc.

It is known as the B&W Integral-Furnace Boiler, Type FM, and is produced in standard sizes for loads ranging from 7,000 to 25,000 lb. of steam per hour, at pressures up to 250 psi. It is a water-tube boiler with a completely water cooled furnace, possessing the advantages of compactness, portability, simplicity, reliability and safety. It is delivered as a unit, and on arrival it is ready to skid or lift into position, hook up and place in operation. If conditions require, it can be moved from one location to another.

Firing may be by oil, gas, or combination oil and gas. The boiler is also suitable for outdoor service as the entire boiler and furnace is enclosed in a rigid steel casing designed to properly permit expansion and contraction of the various components due to temperature changes.

1 1 1

HOT SPRAY LACQUER PROCESS* SPEEDS PRODUCTION

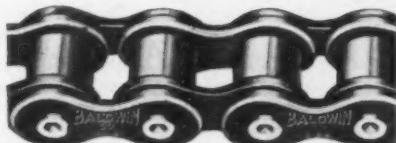
A new auto lacquer finishing technique which materially speeds up production and provides attractive, more durable, lacquer finishes was recently announced by the Hercules Powder Company, Wilmington, Del. The new "Hot-Spray Lacquer Process", as it is termed, has made it possible for auto manufacturers to reduce the number of quick drying lacquer coats from 33 to 50 percent.

By spraying the lacquer hot, the solids content of each coat is higher than ever before and the thickness of each coat is greater. This means that two coats of hot lacquer can do the job where three coats were used, it is stated. Where two coats of lacquer were used, one coat of hot lacquer will usually be sufficient.

According to J. B. Wiesel of the Hercules Company, the new process brings the cost of applying lacquer into approximately the same range as applying synthetic enamels. He stated that lacquer is the fastest drying finish and is the easiest finish to use. "The hot-spray method of application produces all of the advantages which are possible to obtain with cold lacquer plus many more, including: solids are higher and the thickness obtained for each pass is greater, solvent waste is lower, coverage per gallon is increased, fewer coats are needed, and capacity of the finishing plant can be increased", he said. "Today over one-half of America's new car production is finished with nitrocellulose lacquer."

(Please turn to page 276)

our **complete
chain
line**



BALDWIN-REX ROLLER CHAIN, available in a complete range from $\frac{1}{4}$ -inch to $2\frac{1}{2}$ -inch pitch for high speed power transmission and timing.



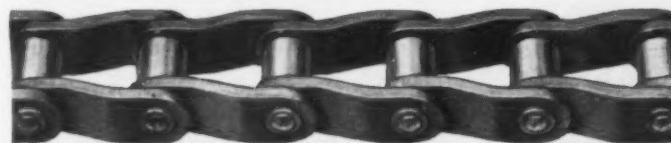
BALDWIN-REX DOUBLE PITCH ROLLER CHAIN for economical power transmission and conveying under slow speeds.



REX TABLE TOP CHAIN for conveying bottles, jars, cans, packages, small parts where smooth transfer and cleanliness are required.



REX PINTLE CHAIN, a drive and conveyor chain used where long life due to greater bearing area is needed.



REX CHABELCO STEEL CHAINS, available in a range of sizes from $1\frac{1}{4}$ -inch to 36-inch pitch for drive and conveyor service under moderate to heavy loads.



These chains are representative of the complete Chain Belt Line. There are many other sizes and types as well as a complete range of chain attachments for every type of conveyor service.

Chain Belt Company
of MILWAUKEE

**can save you time...
cut costs...
increase efficiency!**

There are several important reasons why you'll find it pays off in dollars to make your chain selections from the complete Chain Belt line.

In the first place, you'll find it advantageous to order all your chain requirements from one source. Because our line is complete, you can order from us the right chain for every application in your plant. You'll save valuable time, simplify your ordering, expedite your paper work, by dealing with only one source of supply.

Again, because the line is complete, you'll be sure to get the exact chains that best fit your particular applications. Our Field Sales Engineers can recommend without prejudice the chain which will mean lowest overall cost and highest overall efficiency. Whether cast chain, steel chain or finished steel roller chain is indicated, you'll find the size and type you need when you order from Chain Belt Company.

Furthermore, when you specify Rex or Baldwin-Rex Chains, you are assured the highest quality product money can buy. Over 50 years of chain-making experience are behind every strand. Every design has one or more exclusive features found in no other make. The Chain Belt Field Sales Engineer is anxious to give you the complete story. Call him or mail the coupon.

**CHAIN BELT DISTRICT SALES OFFICES
ARE LOCATED IN 30 LEADING CITIES**

CHAIN BELT COMPANY
1764 W. Bruce Street
Milwaukee 4, Wis.

51-103

Gentlemen:

I am particularly interested in
 Please send me descriptive literature.
 I would like to have a Rex Field Sales Engineer call.

Name.....

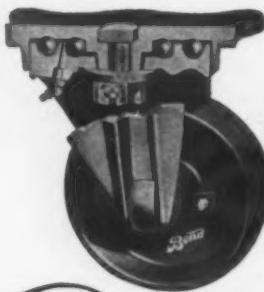
Company..... Dept.....

Address.....

City..... State.....



3A Series—
Single Ball Race Swivel Caster



23A Series—
Double Ball Race Swivel Caster



36A Series—
Double Ball Race Swivel Caster



1A Series—
Stationary Caster



40A Series—Double Ball Race
Structural Steel Swivel Caster

**BOND FOUNDRY &
MACHINE COMPANY**

MANHEIM,
PENNA.



**Dual Wheel
Swivel Caster**

MODERN MATERIALS HANDLING FOR INCREASING PLANT CAPACITY

Although 75% of the nation's industrial plants are more than 25 years old, industry can increase productivity to meet military needs and reasonably satisfy civilian demands, by substituting modern mechanized handling methods for "muscle handling", according to Leo J. Panta of the Yale & Towne Manufacturing Company. Pointing out that "handling of all sorts is the soft underbelly of production" he said there are 40 improved materials handling methods through which productivity may be increased in old plants.

"It is in the sphere of materials handling that industry can make almost incredible progress in reducing cost, increasing unit output per manhour, and in vitalizing over-all production efficiency", he said. While old plants at first glance seem to exclude efficient manufacturing, a combination of engineering ingenuity and imagination abetted by some modern mechanized materials handling equipment and techniques, can often make a more efficient operating unit of even the oldest plant.

1 1 1

COATING ON HOPPER CARS WITHSTANDS SEVERE SERVICE

Corrosive action of acids, alkalis and other chemicals on railroad hopper cars and similar equipment is forestalled up to six times as long by a finish known as Carclad, based on Vinylite resins, produced by the Sherwin-Williams Co.

Test cars painted with the material carried punishing cargoes such as cement and soda ash more than three years, and remained almost completely free of corrosion even where sledge hammers had been used to loosen cargo.

In addition to providing long-life resistance to corrosive effects of acids, soda ash, sulphur, alkalis, phosphate, common salt and cement, the finish withstands repeated scrubbing and washing with strong cleaning solutions. It is said to have the weather durability of the best grade synthetic enamels as well as unusual abrasion resistance. Concentrated acids affect the finish to some extent. Aromatic hydrocarbons, ketones, esters and some chlorinated hydrocarbons will soften the finish but as long as no abrasion occurs, the film will harden to its original state when allowed to dry. It is applied with the same equipment and technique normally used to apply a synthetic lacquer or enamel.

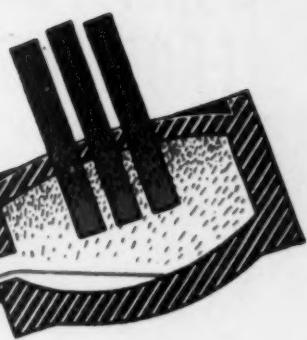
1 1 1

DECALS FOUR TIMES BRIGHTER WITH FLUORESCENT COLORS

Decals created with fluorescent colors were recently introduced by Palm, Fechteler & Co., New York. It is stated that the fluorescence of the decals lasts over six months if not exposed to the rays of the sun. The colors available are fire orange, neon red, arc yellow, Saturn yellow and signal green.

ARISTOLOY STEELS

HIT THE MARK



Stereograph readily reveals not only the necessary alloys, but quickly divulges minute quantities residual metals present.

ARISTOLOY
STEELS

STANDARD STRUCTURAL ALLOY
BEARING QUALITY • ALLOY TOOL
SPECIALTY • NITRALLOY
CARBON TOOL • STAINLESS
MAGNAFLUX— AIRCRAFT QUALITY

COPPERWELD STEEL COMPANY, WARREN, OHIO

117 Liberty Street
New York, New York

176 W. Adams Street
Chicago, Illinois

P. O. Box 1633
Tulsa, Oklahoma

1578 Union Commerce Building
Cleveland, Ohio

7251 General Motors Building
Detroit, Michigan

403 W. Eighth Street
Los Angeles 14, California

528 Fisher Building
Detroit, Michigan

3104 Smith Tower
Seattle, Washington

Monadnock Building
San Francisco 5, Calif.

a metal ball PROBLEM?



Whether it is a precision ball bearing or one of the other many ball applications in industry, your problem will not be entirely new. Strom has been in on many ball problems and knows the importance of the right ball for the job.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom

STEEL BALL CO.

1850 So. 54th Ave., Cicero 50, Ill.

Largest Independent and Exclusive
Metal Ball Manufacturer

Adopt Stock Numbers Code For Power Hack Saw Blades

The Hack Saw Manufacturers Association of America, 50 Broadway, New York, N. Y., announces adoption of a standard Stock Numbers Code for POWER sizes of hack saw blades, and advises that the code has been endorsed by the National Supply and Machinery Distributors' Association and the Southern Supply & Machinery Distributors' Association. The new code does not conflict with any previously used code, will be understood by all manufacturers of hack saw blades, and can be used by any distributor or user of hack saw blades.

The standard Stock Numbers Code consists of six figures, arranged in sequence as follows:

Length—First two figures

Number of Teeth—3rd & 4th fig.

Thickness—Fifth figure

Width—Sixth figure

The complete formula, together with code numbers for all domestic standard power sizes, is as follows:

Length—Actual catalog length.

Teeth—Actual number of teeth per inch.

When number of teeth is a single digit, precede this digit by the figure "0". When number of teeth contains a fraction, disregard the fraction.

Thickness—Middle figure of number of thousandths of thickness.

Width—Less than $2\frac{1}{2}$ ":—Number of quarter inches in actual width.

$2\frac{1}{2}$ " or more:—Last figure of number of quarter inches in actual width.

Exception:—For $\frac{5}{8}$ " wide use figure "2".

Spacing of Code Numbers: Separate first four figures from last two figures by a space, dash or other spacing symbol.

Code Numbers as per Formula for Stock Numbers Code
October 19, 1950

For Power Sizes of Hack Saw Blades	Sizes of	Code
Hack Saw Blades	Numbers	
12 — $\frac{5}{8}$ — .032 — 14	1214-32	
" 18	1218-32	
12 — 1 — .049 — 14	1214-44	
12 — 1 — .065 — 10	1210-64	
14 — 1 — .049 — 10	1410-44	
" 14	1414-44	
14 — 1 — .065 — 10	1410-64	
14 — $1\frac{1}{4}$ — .065 — 4	1404-65	
" 6	1406-65	
" 10	1410-65	
14 — $1\frac{1}{2}$ — .072 — $2\frac{1}{2}$	1402-76	
" 4	1404-76	
" 6	1406-76	
17 — 1 — .049 — 14	1714-44	
17 — 1 — .065 — 10	1710-64	
17 — $1\frac{1}{4}$ — .065 — 4	1704-65	
" 6	1706-65	
" 10	1710-65	
18 — 1 — .065 — 10	1810-64	
18 — $1\frac{1}{4}$ — .065 — 4	1804-65	
" 6	1806-65	
" 10	1810-65	
18 — $1\frac{1}{2}$ — .072 — $2\frac{1}{2}$	1802-76	
" 4	1804-76	
" 6	1806-76	
18 — 2 — .085 — 4	1804-88	
" 6	1806-88	
21 — $1\frac{1}{2}$ — .072 — $2\frac{1}{2}$	2102-76	
21 — 2 — .085 — 4	2104-88	
" 6	2106-88	
21 — 2 — .100 — $2\frac{1}{2}$	2102-08	
24 — 2 — .085 — 4	2404-88	
" 6	2406-88	
24 — 2 — .100 — 4	2404-08	
24 — $2\frac{1}{2}$ — .100 — $2\frac{1}{2}$	2402-00	
30 — $2\frac{1}{2}$ — .100 — 4	3004-00	
36 — $4\frac{1}{2}$ — .125 — $2\frac{1}{2}$	3602-28	

ated in Handbook H28, the basic data for NGO threads will be changed to conform. This change will not affect their interchangeability with the threads as now specified.

1 1 1

NEW SHEET METAL FOR ELECTRONICS FIELD

A new sheet metal known as Electrosheild for the electronics field is announced by American Cladmetals Company, Carnegie, Pa. It is said to improve the performance of communications equipment by shielding it from outside interference. It consists of a magnetic base, clad on each side with a non-ferrous conductor, and is made in light and heavy sheets up to about 35 square feet in area. It is stated that in use the new metal shows an immediate improvement over other shielding materials. Its effectiveness in providing clearer reception and transmission is specially noticeable in the lower frequency ranges now employed in electronic equipment.

(Please turn to page 280)



Sheffield—first to put tooth-paste in tubes, in 1892—has served packagers for over half a century in producing billions of tubes for—

MEDICINAL ointments—salves—jellies—extracts.

DRUG AND COSMETIC pastes—creams—shaving preparations—deodorants—depilatories.

INDUSTRIAL AND HOUSE-HOLD cements—adhesives—compounds—greases—paints—fillers—food pastes, syrups, and creams.



YOUR RELIABLE SOURCE FOR COLLAPSIBLE TUBES

Through periods of ready supply and shortages alike, hundreds of leading firms have relied solely on The Sheffield Tube Corporation to furnish all their tube requirements. Why not place your confidence in Sheffield's century-long record of service!

You can depend on Sheffield's continuity of manufacturing experience to produce value all the way. Call on the Sheffield representative nearest you for information and assistance.

All types of tin, tin-coated, aluminum, lead, and Sheffalloy tubes. Free samples and catalog. Remember, packaging in Sheffield Tubes gives your product a container that is . . . Sturdy • Safe • Sanitary • Smart • Convenient.

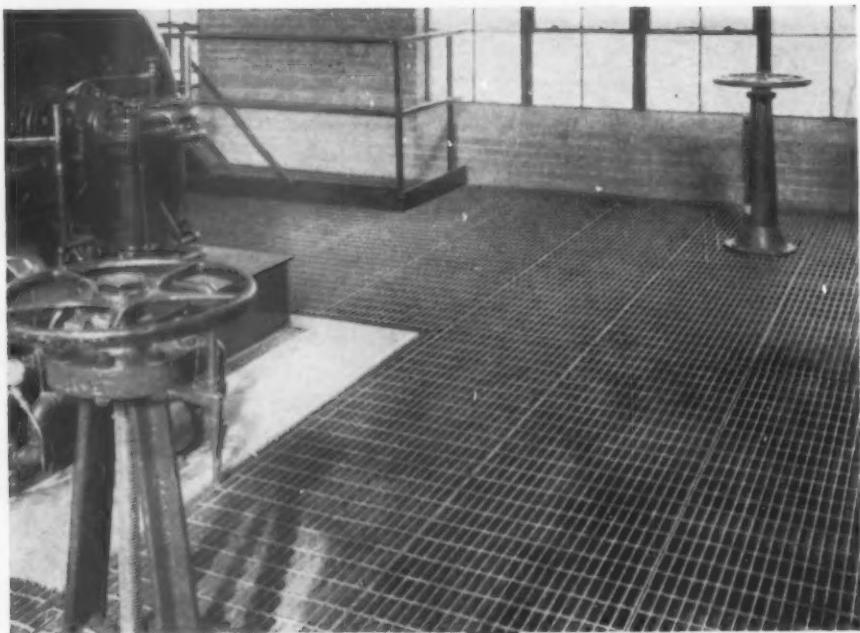
THE SHEFFIELD TUBE CORPORATION

HOME OFFICES • NEW LONDON, CONN.

W. K. SHEFFIELD, V. P. CHARLES ARCH T. C. SHEFFIELD
NEW YORK 18, N. Y., 500 5th AVE. CHICAGO 16, ILL., 3132 CANAL ST. LOS ANGELES 38, CAL., 7024 MELROSE AVE.
EXPORT: 500 FIFTH AVE., N. Y. CABLE "DENTIFRICE", NEW YORK



the IDEAL OPEN FLOOR for every industry!



IT'S Blaw-Knox *Electroforged Steel Grating* . . . with all the features to meet your requirements for open flooring. *Exceptionally strong*, electroforged into one solid, permanent piece. *Safe*, sure footing with the non-slip twisted bar. *Maximum open area* for good ventilation and light. *Self-cleaning*, no sharp angles or corners to clog. *Easily installed*, simple to cut and band for fitting around obstacles with no loss of strength. *Easily maintained*, paint reaches entire surface. *Adaptable to many uses*, indoors and out, for every industry.

Remember, whenever you need steel grating, be sure to **SPECIFY BLAW-KNOX.**

SEND FOR NEW BULLETIN

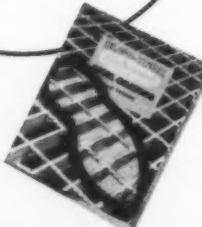
Get complete details of all the superior features that make Blaw-Knox Steel Grating the best buy for your requirements. Write for your copy of Bulletin 2296 today!

BLAW-KNOX DIVISION of Blaw-Knox Company

2075 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

MEETS ALL ENGINEERING REQUIREMENTS FOR

- Open Flooring
- Sidewalk doors
- Bridge surfacing
- Catwalks
- Subway grating
- Sidewalks
- Stair treads
- Many other uses in every industry



NOT ASSURANCE OF BIG REDUCTION IN POWER COST

The cost of atomic fuel may ultimately be competitive with that of coal or oil, but much more knowledge and experience must be obtained before any reliable estimate can be made, according to Harry A. Winne, General Electric vice president in charge of engineering policy.

Speaking before California Manufacturers Association meeting, on "Industry and Atomic Energy—Prospects and the Future", he said that where electric power is today available readily and at reasonable cost, "we must not look for any revolutionary reduction in power cost due to the advent of atomic energy." He emphasized that the cost of fuel represents only 20 or 25% of the total price paid by the consumer for fuel-generated power, and said that even if nuclear fuel were free, the resultant cost reduction would not be as great as some persons have predicted.

He pointed out that there is still no way of converting directly to electricity any significant amount of the energy released from splitting the atom. "As I visualize an atomic power plant, the atomic pile and some auxiliary equipment will merely replace the fuel-fired steam boiler, and from that point on the atomic plant will be the same as one using coal or oil as a fuel. We are not yet ready technically to build a 100,000 kilowatt atomic power plant, and won't be for quite a long time," he said.

MEASURABLE FLEXIBILITY AVAILABLE IN LAMINATED PLASTIC COMPONENTS

Thermosetting plastic components laminated by the Synthane Corp. of Oaks, Pa., are now being furnished with predetermined, measurable flexibility for applications where pliancy is an important property.

Installation of a highly sensitive Olsen stiffness tester in the new Synthane laboratory permits detection of small variations in elasticity, brittleness, toughness and plastic flow. Thus, guesswork can be avoided in specifying parts which will be subject to bending, and quantitative measurements are now being applied to answer the old question, "How flexible is flexible?"

One component laminated for a manufacturer of electronic equipment, for example, is a 1/32-inch strip of XKP flexible stock Synthane 5 inches long by 9/32-inch wide. These strips are wire-wound by the customer, then bent into a circle to form a volume-control potentiometer. With the new testing equipment, it is possible to determine the required range of flexibility to allow safe circular bending of the five-inch-long strip.

Values can be determined similarly, of course, for any application in which the laminate must withstand bending stresses within definite limits.

(Please turn to page 282)

BLAW-KNOX ELECTROFORGED STEEL GRATING

Want Additional Product Information? See Page 19.

PURCHASING

25%

MORE HOLES PER GRIND!

**This CLE-FORGE High Speed Drill
solved a tough problem!**



This job was really rough. Each of the eight drills had to make two holes, and each surface was at an angle. The drills were averaging 1470 holes per grind, with considerable breakage. ♦ A *Cleveland* Service Representative was called in to analyze the problem. He recommended switching to the CLE-FORGE High Speed Drill shown at the left—a regular stock drill that has a heavier web. After an exhaustive test it was found that CLE-FORGE High Speed Drills averaged 1838 holes per grind! Breakage was practically eliminated! ♦ Let a *Cleveland* Service Representative show how you can get MORE HOLES PER DOLLAR. Contact our nearest Stockroom, or . . .

Telephone Your Industrial Supply Distributor



THE CLEVELAND TWIST DRILL CO.

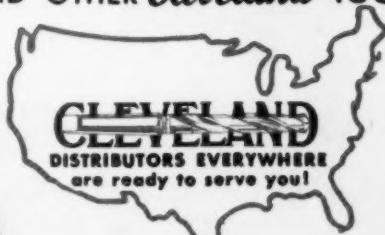
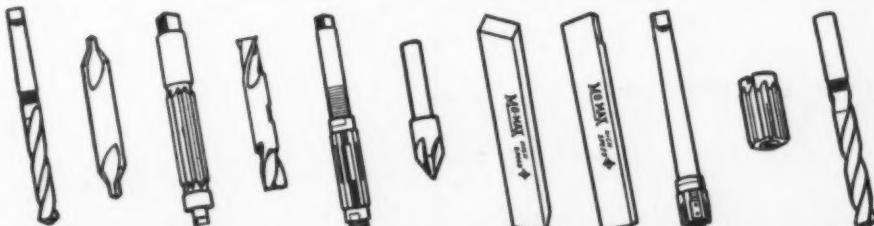
1242 East 49th Street

Cleveland 14, Ohio

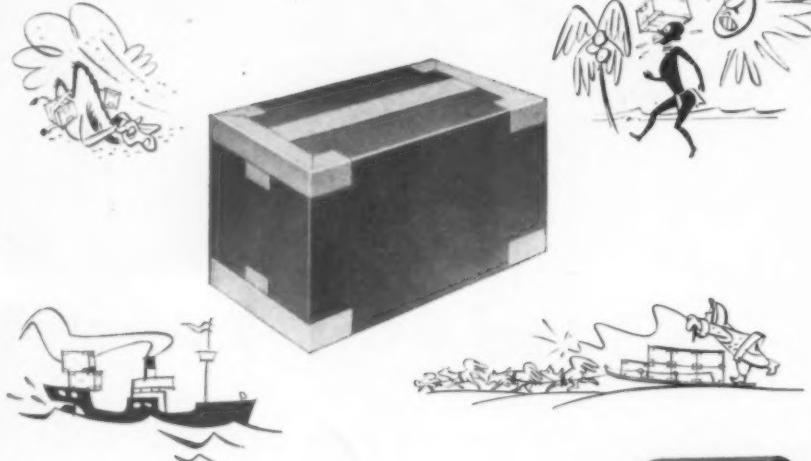
Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 1 • San Francisco 5 • Los Angeles 51

E. P. Barrus, Ltd., London W. 3, England

ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER *Cleveland* TOOLS



Only gummed tape gives your goods this added protection



Only gummed sealing tape closes all carton openings completely and tightly. Only gummed sealing tape seals out all dirt and moisture...discourages pilferage...keeps your products in "factory fresh" condition all the way to your customers. No other method of closure combines the advantages of quick, easy, complete sealing...tight at corners, edge seams, and center slot...all at the same time...and at minimum cost.

For better protection use **gummed tape...**
no other closure does so much for so little
and for gummed tape on which you can count for maximum protection specify...



the largest selling gummed tape in the world

Orange Core is available plain or printed, in a choice of widths, weights, lengths and colors.



Send today for comprehensive folder explaining the advantages of Orange Core gummed tape, including sample of this excellent sealing product. Ask for folder titled: "The mark of a Better Tape!"



Orange Core is a dependable tape that brings your shipments through in top condition. Strong, pliable, long-fibered kraft and a special, fast acting adhesive are combined to form a sealing tape that gives a weld-like bond with the carton. Every step in the manufacture of Orange Core, from tree to finished tape, is controlled by Hudson. You are assured a uniform product at all times to protect your goods. Ask your paper merchant to tell you the complete story about Orange Core gummed tape.

HUDSON PULP & PAPER CORPORATION, Dept. Q-6
505 Park Ave., New York 22, N.Y.

HUGE EXPANSION INVESTMENT BY PETROLEUM INDUSTRY

For the fifth consecutive year, the domestic petroleum industry has scheduled the investment of more than two billion dollars for development, modernization and expansion of its facilities in this country, according to Frank M. Porter, president of the American Petroleum Institute, New York. He estimated capital expenditures of the nation's oil companies during 1950 at \$2,400,000,000, of which all but \$228,000,000 is earmarked for domestic facilities.

Expenditures for production operations—searching for and developing oil and natural gas reserves and supplies—will account for more than half the capital outlay. Investments for refinery facilities in 1950 will be close to \$394,000,000, much of the money going into the latest type cracking plants. Transportation estimates total \$324,000,000, the major portion of which is scheduled for pipeline construction work. Efforts to modernize, improve and expand its marketing facilities, are expected to result in a record-high capital investment of \$281,000,000, the goal being more efficient and more dependable service to the oil-buying public.

As a result of the unprecedented industry expansion in postwar years, the oil industry's crude production capacity has increased 27%, its refining capacity 21%, and the nation's proved crude oil reserves 24%.

1 1 1

STEEL CHEAPER THAN DIRT

Steel is literally cheaper than dirt, according to Benjamin F. Fairless, President of United States Steel. In a speech before the annual meeting of the California Manufacturers Association in San Francisco, he said that the low price of steel was an outstanding and little understood reason for the present shortage.

"Steel is so cheap today that few people can afford to use substitutes for it," Mr. Fairless said, "and if we were willing to charge as much as consumers would be willing to pay for our products, much of this apparent shortage would disappear."

"This is not the American way, however, and certainly it is not our way," he pointed out. "With rising prices all around us, our prices, generally, have not been raised this year; and when in the past we have been obliged to increase them, we have done so only under the stern compulsion of mounting production costs. That is because we realize—just as you do—that the policy of charging the lowest possible price, in order to build the greatest possible volume of sales, is the foundation stone upon which American business has erected an industrial economy that is the envy of every other nation in the world."

The average price of all the finished steel sold by United States Steel this year has been just under a nickel a pound, and some finished products now sell at less than 3½ cents, Mr. Fairless

(Please turn to page 284)

new kid, "bang" goes
any 15 seconds now.
Nothing is more exciting.
Your
house Company for
a new holding to determine
what kind of what you are
recommending his recorder
cally by the device used to
have time. It stops when the
recorder without the signal

TERS

PLAYERS

who regularly visit the public and
lic identification card. This card
shows the employer's name.
If you doubt this right of a person
employee of this Company and its
station card, please call the business

ded in this directory are based upon
changes as many be made from time

I TELEPHONES

service, please do not use any devices
except those furnished by the Company.
Claimed by agents to eliminate noise, it
are usually determined and interfere with

1ST

bers and transfers to New Directory.

NAME REASON

YOUR NEARBY KAISER ALUMINUM DISTRIBUTOR IS LISTED HERE:

ATLANTA-WICHITA

ATLANTA, Georgia	Morrison-Drabner Steel Co., Inc.	Alpine 4885	MINNEAPOLIS, Minnesota	Korhumel, Heffron & Preiss Steel Co.	Gladstone 5943
82-84 Milton Avenue			3225 Como S.E.		
BALTIMORE, Maryland	Hill-Chase Steel Company of Maryland	Peabody 7300	NEW ORLEANS, Louisiana	1019-1025 Bienville Street	Raymond 2116
6311 Erdman Avenue		Phone 1733-M	Standard Brass & Mfg. Co.	2309 Tulane Avenue, Aud. 1353	
ASHEBORO, N.C.		Phone 7-4573	A. R. Purdy Company, Inc.	Pine Avenue & Orient Way, Lyndhurst, New Jersey	Rutherford 2-8100
RICHLAND, Va.			Lyndhurst	Chelsea 3-4455	Humboldt 2-5566
BEAUMONT, Texas	Standard Brass & Mfg. Co., 705 Milam St.	Phone 4-2641	New York:		
CHICAGO, Metropolitan Area	Korhumel, Heffron & Preiss Steel Co.	Ambassador 2-6700	OAKLAND, California	Gilmore Steel & Supply Company	Glencourt 1-1680
2424 Oakton Street, Evanston, Illinois		Wabash 4480, 4481	1960 Cypress		
CINCINNATI, Ohio	Harrison-Drabner Steel Co., Inc.	Atlantic 5100	OMAHA, Nebraska	Gate City Steel Works, 11th & Seward Streets, Atlantic 1830	Phone 7124
1074-1084 Summer Street			Profile Supply Company	P. O. Box 2049, 1601 Atlantic Avenue	
CLEVELAND, Ohio	Nottingham Steel Company		PHILADELPHIA, Pennsylvania	Hill-Chase & Company, Inc.	Delaware 6-5400
West 45th Street & Division Avenue			Trenton Avenue & Ontario Street	Allentown	Allentown 28077
DALLAS, Texas	Delta Metals, Division of Delta Distributors, Inc.	Logan 6-6697	York:		York 5790
3201 Oak Lane		Phone 3-1895	PHOENIX, Arizona	First & Jackson Streets	Phone 8-5331
DAVENPORT, Iowa	Nichols Wire & Aluminum Co.	Hogarth 3858	PORT ARTHUR, Texas	Standard Brass & Mfg. Co., KCS & Fourth St.	Phone 5-9377
1725 Rockingham Road	Cauthorn Distributing Company	Lorain 7-3380	Eagle Metals Company	2336 N. Randolph	Tuxedo 5201
DETROIT, Michigan	9999 Broadstreet		SAN FRANCISCO, California	840 Brannan Street	Klondike 2-0511
	Copper & Brass Sales, Inc.		Gilmore Steel & Supply Company		
HONOLULU, T. H.	3000 East Woodbridge		SEATTLE, Washington	Eagle Metals Company	3628 East Marginal Way, Eliot 4764
HOUSTON, Texas	Permanente Cement Co., Pier 32, P. O. Box 79, Phone 5-2541		SHREVEPORT, Louisiana	Standard Brass & Mfg. Co., 1557 Texas Ave.	Phone 2-9483
INDIANAPOLIS, Indiana	Standard Brass & Mfg. Co., 2020 Franklin Ave., Preston 1123		Eagle Metals Company	East 320 Trent Ave.	Madison 2419
F. H. Langenkamp Company, 229 East South St., Riley 9311			WICHITA, Kansas	General Metals Mfg. Co., Inc.	Phone 3-4313, 3-2373
KANSAS CITY, Missouri	Industrial Metals, Inc., 410 Southwest Boulevard, Victor 1041			218-220 South Wichita	
LOS ANGELES, California	Eureka Metal Supply Company	Mutual 7286			
551 East Macy Street	Earle M. Jorgensen Company	Lucas 0281			
10650 South Alameda	Vernon:				
MILWAUKEE, Wisconsin	Reliance Steel Company, 2068 East 37th Street, Adams 6133				
KHP Milwaukee Steel Company	1550 South First Street	Evergreen 3-5800			

THERE'S A NUMBER HERE YOU SHOULD MEMORIZIZE

Do you find it hard to get certain alloys and sizes of aluminum? If so, your nearby, *helpful*/Kaiser Aluminum Distributor is a good man to keep in touch with.

He's one of the nation's leading materials suppliers. He *knows* the aluminum industry...and he's backed by the fully integrated resources of Kaiser Aluminum & Chemical Corporation.

That doesn't mean your Kaiser Aluminum Distributor can always meet your requirements, but it does mean

he represents your best bet today!

So memorize the telephone number of your nearby Kaiser Aluminum Distributor! It's listed on the telephone page above.

Kaiser Aluminum

KAISER ALUMINUM & CHEMICAL SALES, INC., KAISER BLDG., OAKLAND, CALIF. • OFFICES IN MAJOR CITIES

Here's Where HY-PRO taps paid 78 to 1



for a Plastics Manufacturer

PART: Molded Plastic Flat Iron Handle

PROBLEMS: Taps being used to thread blind holes in molded plastic flat iron handles had a maximum life of 500 threaded holes in addition to spoiling many pieces by reaming out holes.

Then They Called in the HY-PRO Sales Engineer

HY-PRO SOLUTION: Hy-Pro's Engineer came up with a tap of special design having their exclusive HARDER-NELL surface treatment. Results obtained in this highly abrasive plastic are fantastic—39,000 threaded holes per tap.



Let Hy-Pro solve your tapping problem too—call a Hy-Pro Sales Engineer today.

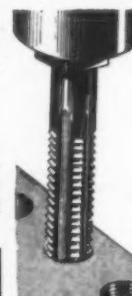
Order from your Distributor



HY-PRO TOOL CO.

NEW BEDFORD, MASSACHUSETTS

A SUBSIDIARY OF CONTINENTAL SCREW COMPANY



**NOW for complete protection
FROM THE WET • GREASE • OILS • ORDINARY ACIDS**

TOWER'S FISH BRAND *NEOPRENE



These sturdy, durable, 100% DuPont NEOPRENE garments give that extra service to those who require protection from greases, oils, and most acids. There is a TOWER protective garment especially adaptable for every type of industrial activity. We will be glad to recommend the garment which best meets your individual requirements.



*A chemical rubber product of the DuPont Company

For folder of styles and detailed information write Department PA,

NEOPRENE

RUBBER



(Continued from page 282)

said. He continued: "What else in the world can you buy today for 3½ cents a pound? Eggs, butter and meat? No! They cost from twenty to thirty times as much as steel. There is literally nothing in our grocery store at home that you can buy for as little as 3½ cents a pound—not even the commonest garden vegetables, nor flour, nor sugar, nor potatoes, nor anything else on the shelves.

"Steel undersells every other metal in the world. It is cheaper than the cheapest material from which clothing is made; it is cheaper than any of the fibers that go into that material. It is cheaper than the lumber that goes into your homes. It is even cheaper than the common pulp upon which your daily newspaper is printed.

"If you lived among the cliff dwellers of New York City, and if you wanted a little potting soil to put around your geranium plants on your window sill, you could buy it at your neighboring seed store for seven cents a pound—and that's twice as much as some finished steels would cost you. Yes, the undeniable fact is that—in the case I have just described—steel is literally cheaper than dirt!

"I wonder if you remember, as I do, the days when the price of raw cotton fell to five cents a pound, and everyone regarded it as a national calamity. Well, today cotton is above 40 cents a pound and the Government has no thought of abandoning its price-support program.

"Yet last December, when steel was selling at much less than five cents a pound, and when it became necessary to increase the price by an average of less than two-tenths of a cent a pound. Senator O'Mahoney denounced the price rise as a national scandal and made it the subject of a full dress Congressional investigation.

"Now, honestly, isn't it about time that we began to develop a little realistic perspective about prices, and stopped making steel a political football?

"In my opinion, we have no more important problem facing us today than the task of establishing a workable line of communication between industry and Government so that both may have a mutual understanding of each other's problems, and so that both may strive patiently together to find a fair and practical solution to those problems."



PHILIPPINE BUSINESS DIRECTORY

The Pacific Trade Edition of the Philippine Business Directory, compiled at 24 California Street, San Francisco, Calif., contains listing of importers and exporters of the Pacific Area, and lists Philippine exporters of 67 items. The publication contains a text of the new import control law and its appendices, the basic regulations of the Central Bank of the Philippines on exchange control, and miscellaneous statistical information. The Directory is available for \$2.00 per copy plus 15 cents for handling and postage.

(Please turn to page 286)

ROLLOCK FABRICATED ALLOYS

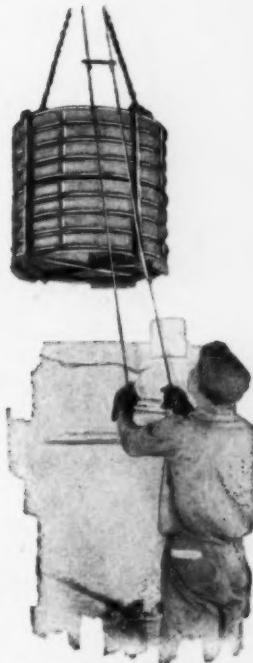
HEAT AND CORROSION
RESISTANT



Sling lies on floor as trays are filled.



Sling is raised to fit into indentations.



Sling safely holds assembly as it is hoisted to furnace.

3 SLING SHOTS THAT SCORE FOR CRUCIBLE STEEL

The three camera shots above clearly picture the three principal advantages of this fabricated-welded stainless steel tempering assembly. Both Rolock and Crucible Steel engineers contributed to the design which features: (1) a rugged carrier sling, (2) indented trays for close, safe fit of sling, (3) maximum furnace capacity.

The shallow, easy stacking trays separate varied sizes of Alnico permanent magnets and a thermo-

couple is used between the fourth and fifth trays ...with another one on the top. The assembly weighs 665 lbs., maximum load 3200 lbs., a ratio of 4.8 to 1.

Rolock job-engineered heat treating equipment will speed handling, give you more uniform quality, lengthen service life and reduce work-hour costs. If you have such problems, call our Rolock engineers for practical recommendations.

Offices in: PHILADELPHIA • CLEVELAND • DETROIT • HOUSTON • INDIANAPOLIS • CHICAGO • ST. LOUIS • LOS ANGELES • MINNEAPOLIS

ROLLOCK INC. • 1272 KINGS HIGHWAY, FAIRFIELD, CONN.

**JOB-ENGINEERED for better work
Easier Operation, Lower Cost**

ROLLOCK



A SYMBOL THAT MEANS "The World's Fastest Transportation Service"

This is the symbol of Emery Air Freight . . . everywhere acknowledged as the "World's Fastest Transportation Service."

Today . . . and *every day* . . . the Purchasing Agents of America's leading corporations are using Emery to make deadlines they once believed impossible.

Emery coordinates and combines the facilities of many different carriers . . . selects the fastest and most dependable, both ground and air, for each individual shipment. And *every* shipment, whether a multi-ton casting or a three ounce replacement part, gets personalized handling . . . all the way . . . from point of origin to destination.

Emery is today answering America's peacetime requirements and new defense demands with maximum speed plus *absolute control* . . . control maintained through a nationwide network of offices and agents in over 200 cities.

Specify "Emery Routing" to your supplier.

The shipment you hope will arrive tomorrow may yet reach you today!

● Get the complete story of this nation-wide, PERSONALIZED, high speed air forwarding service—call your nearest Emery office or mail this coupon today!



EMERY AIR FREIGHT CORPORATION, Dept. P-2
314 E. 39th St., New York 16, N.Y.
Telephone: ORegon 9-1020

Please send me, without charge, a copy of your new folder, "THE WORLD'S FASTEST TRANSPORTATION SERVICE."

Name _____

Address _____

City _____ State _____

EMERY AIR FREIGHT CORPORATION "THE WORLD'S FASTEST TRANSPORTATION SERVICE"

General Office: 314 East 39th Street, New York 16, ORegon 9-1020
Offices in Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Newark, Los Angeles, Milwaukee, Philadelphia, Pittsburgh, St. Louis, San Francisco, Washington, D.C.
Agents in all other major cities and towns in the U.S.A.

DATA SHEET ON TIN-ZINC PLATING

Up-to-date data sheet on the new tin-zinc plating process, is available from Metal & Thermit Corp., 100 E. 42nd St., New York, N.Y. Tin-zinc plating, developed as a result of the current shortage of cadmium has many applications in the plating of automotive and general hardware, radio and television chassis, die castings and other parts. The tin-zinc alloy finishes provide good corrosion resistance and excellent solderability and are extremely economical to deposit, according to the Metal & Thermit Corporation.

1 1 1

GEAR FINISHING INCREASED TENFOLD

New method for deburring gears and similar shaped parts, developed by the Osborn Manufacturing Co., Cleveland, Ohio, using a semi-automatic universal work piece holder and brushing lathe set-up, does ten times the volume of work compared with manual operations. In a series of production runs by Osborn a new operator was able to finish 200 gears per hour. With the hand method, using a hard tool, a trained operator is only able to finish 20 gears per hour. And, states the company, not only is there a 900% production increase, but according to the standards set by the brushed gears, none of the 20-hand-finished pieces would have passed inspection. The new Osborn brushing lathe is adaptable to many practical sizes of brushes and can be used on a wide range of gear sizes. Operation of the lathe solves the problem of a dull brush. Special brushes are required for this operation. The time spent on each gear by brushing is 18 seconds; the time spent by the hand method, 3 minutes per gear.

1 1 1

PORTABLE ELECTRIC DRILLS COMMERCIAL STANDARD

Commercial Standard CS 93-50, Portable Electric Drills, is announced by the Commodity Standards Division, Office of Industry and Commerce, Bureau of Foreign and Domestic Commerce, Washington 25 D.C.

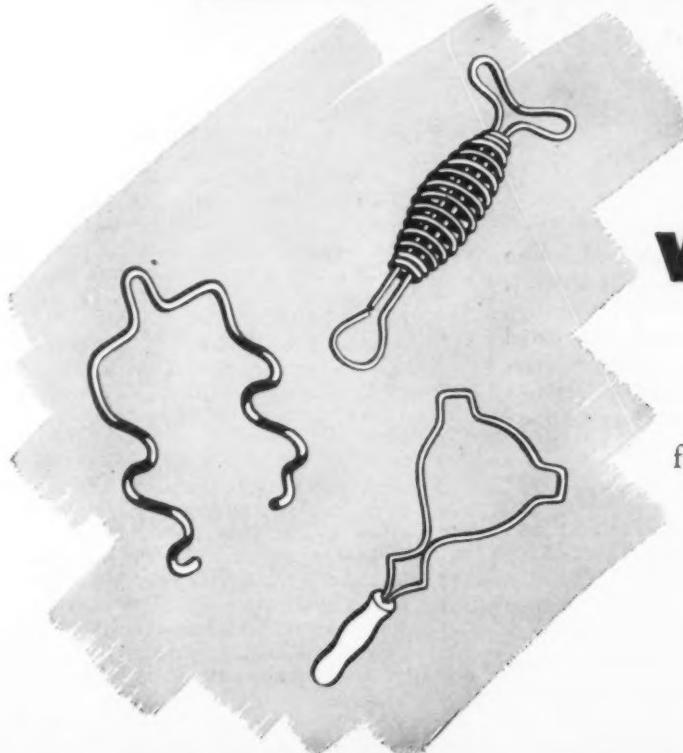
1 1 1

NEW WOOD PRESERVATIVE READILY TAKES PAINT

Zoprex is the name of a new colorless wood preservative announced by the Zone Company of Fort Worth, Texas, which is recommended for wood surfaces which are to be painted. It is also stated to be an excellent wood primer, penetrating deeply and quickly into the pores of the wood. The Zone company states that Zoprex does not "bleed" through paint coats of any color applied over it, and also states that Zoprex can be used to protect such fabrics as rope, canvas, ducking, awnings, bags, tents, burlap and tarpaulins.

(Please turn to page 288)

FORMED WIRES



By

WICKWIRE

We make all types of springs and
formed wires in all sizes, shapes and
designs to meet your specialized needs.
Write for free copy of our booklet, S-500,
entitled "Springs and Formed Wires."

WICKWIRE SPRINGS
AND FORMED WIRES

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

SPRING SALES OFFICE & PLANT - 2 New Bond Street, Worcester 6, Mass.

EXECUTIVE OFFICE - 500 Fifth Avenue, New York 18, N.Y.

SALES OFFICES—Atlanta • Boston • Buffalo • Chicago • Denver • Detroit • New York • Philadelphia

PACIFIC COAST—The California Wire Cloth Corp., Oakland 6, Cal.





- NO CAVITIES between cloth and frame to catch and thus "lose" particles.
- EXACT OPENINGS. Newark Standard Testing Sieves are made to conform to the latest specifications of the National Bureau of Standards.
- CLOTH STRONG and DURABLE. We weave the metal cloth in our own plant, thereby controlling its quality.
- RE-COVERING SERVICE. When the wire cloth is worn out return the sieves for re-covering. Often there is a saving.

Our new four page folder gives complete details and specifications. May we send you a copy?

Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, N. J.

TRAINING BOOKLETS ISSUED BY NATIONAL SAFETY COUNCIL

Six new training booklets called the "Psychology of Safety in Supervision", have just been issued by the National Safety Council. The series is written by Dr. J. L. Rosenstein, industrial psychologist and professor in the department of management, Loyola University, Chicago, Ill. Titles of the booklets are: "You Can't Change Human Nature", "What is your U Q? (understanding quotient)", "Teaching Safety on the Job", "People Act Alike", "Safety Takes Teamwork", and "You Are Human Too".

Complete sets of the six booklets are offered to members of the National Safety Council, 425 No. Michigan Ave., Chicago, Ill., at 90¢ per set in quantities of from 1 to 9; at 85¢ per set in quantities of 10 to 99; at 80¢ per set in quantities of 100 to 199; and at 75¢ per set for 1,000 or more. Prices to non-members are double those listed.

BOOKLET ON SHARPENING CARBIDE MILLING CUTTERS

New issue of booklet M-1714, "Recommendations for Sharpening Carbide Milling Cutters", is announced by Cincinnati Milling and Grinding Machines Inc., Cincinnati 9, Ohio. Copy of this 16-page booklet, duly illustrated, is available upon request.

SEES MORE EXTENSIVE USE OF SYNTHETIC RUBBER

Synthetic rubber is fast becoming the preferred raw material for the rubber industry with its use promising to surpass natural rubber both in the immediate and long term future, declared President H. E. Humphreys, Jr. of the United States Rubber Company, at the re-opening of the Port Neches, Texas synthetic rubber plant, the first of the all-purpose rubber plants to start production under the government's expanded program. The plant, which is operated for the Reconstruction Finance Corp., was thoroughly modernized to increase its production capacity from 60,000 to 72,000 long tons of GR-S all purpose synthetic rubber a year. Mr. Humphreys states that synthetic rubber will account for about 60% of the country's total consumption next year.

Synthetic rubber can be tailor-made for specific application, he said. There is almost no limit to the varieties of synthetic rubber which can be produced. In the case of GR-S synthetic more than 500 varieties have already been developed. Its price structure is more stable than natural because it is not traded on the open market but is a manufactured product. Its quality can be more closely controlled because it is chemically made. The quality of the various synthetics has been so much improved that they perform as well as natural rubber in most products and better in some. Many scientists believe that the day will come when the United States will not need any natural rubber.



Thermoid Hose Boosts Your Profits!

Management looks to you, Mr. P. A., to boost profits by cutting costs. Here's one way to do it! Specify Thermoid Versicon—the one hose that does the job of many special-purpose hose. Built to last longer . . . to save time on the job . . . to reduce your present hose inventories—Versicon handles virtually every gas and liquid.

Thermoid makes a complete line of top-quality molded and wrapped hose for every service—sand blast hose, steam hose, high pressure hose, suction hose and countless others—all built for highest operating efficiency and lowest operating costs.

Ask your nearest Thermoid Distributor or write Thermoid for latest data sheet 3765A.

*Versicon may be used for all air-operated tools, oxygen and acetylene lines. It will handle air, water, gasoline, oil, most insecticides and chemicals, carbonic and other dilute acids, and almost all fluids.

For durability and flexibility, Versicon is made with synthetic oil-proof tube, oil-resistant cover and high tensile rayon cord. Available from $\frac{3}{16}$ " to $2\frac{1}{2}$ " in lengths from 50' to 500' depending on size.

Purchase for Profit—Specify Thermoid

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

**Thermoid
Company**

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

Federated BIG



4

BABBITS

**...For Every
Bearing Need**

White metal bearing problems can be successfully solved almost invariably by using one of the Federated Big 4 Babbitts — Thermodyne, Record, XXXX Nickel, and Merit Metal.

XXXX Nickel and Thermodyne are tough, dense-grained tin-base babbitts for heavy bearing loads at high speed operation.

Merit and Record are ductile, low-cost lead-base babbitts for lighter loads at more moderate speeds.

The Federated Big 4 branded babbitts are scientifically designed to answer most white metal bearing needs, and thus to simplify your purchasing problems. For special requirements, alloys of any composition can be supplied.

To order, or to obtain more information, call or write the nearest of Federated's 11 plants and 25 sales offices across the nation.

**Federated Metals
Division**

AMERICAN SMELTING AND REFINING CO.



Sell The Salesman!

(Continued from page 73)

eliminated if your salesman is acquainted with your industry at large, and in particular with your own plants. Let him know your process and its demands. Explain your general practice in plant construction and maintenance.

I have found it most helpful, whenever possible, to really take time to inform salesmen assigned to my account, especially new salesmen, regarding the basic details which govern the larger part of our purchases. I try to acquaint them with the industry, our own company, our products, and our different processes. Specific problems are discussed concerning where and why we need special alloys for corrosion and sanitary problems. The continuous 24-hour operation is explained, with emphasis upon the need for rugged heavy duty equipment to lessen the possibility of costly shutdowns for maintenance or equipment failure. The use of and need for automatic controls to conserve manpower and produce a uniform product is explained, together with information concerning our major raw materials, their use, and how their reaction affects our processes and equipment.

Efforts Pay Dividends

I further encourage them to read about our industry and to make plant visits. Time thus used is not time spent, but rather time invested in a way that has proved to pay good dividends. These salesmen who "know their customer" as well as their product are far more interested in your account than is the average "leg man". They learn to feel that they are working with you and your company as much as with their own. It produces the ideal situation whereby you have a well informed, experienced liaison between you and your supplier. They know your problems and your needs, and very often bring to your attention new products and methods of their own and other origin, which might fit into your requirements. Your inquiries to them are answered by prompt and complete proposals. Your work is simplified and hours saved by your earlier investment of a little time in selling to your salesman counterpart.

If you have not already "sold your salesman", try it. You will both benefit, and there is no doubt you will both like it.

It is made for **YOU**

so it's complete—
but EASY to use

In building this Directory for purchasing, production, and engineering executives, all non-industrial listings and advertisements are rigidly excluded. That's why it's so compact—yet complete.

Reference to the CONOVER-MAST PURCHASING DIRECTORY is the easiest and quickest way to find sources of equipment, products, and supplies used in industry.

✓ CONOVER-MAST PURCHASING DIRECTORY is complete, and it's easy to find what you're looking for. Use it regularly—the more you use it the better you'll like it.

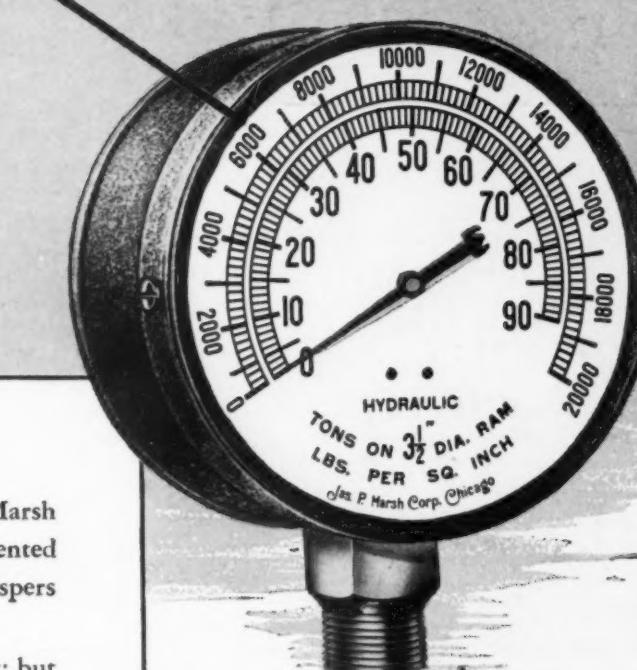
**Conover-Mast
PURCHASING
DIRECTORY**

37 N. Michigan Ave., Chicago 11, Ill.

pressure...

...in ounces

...or tons



HERE is no better picture of the scope of Marsh Gauges than the two extremes represented by these two instruments—one indicating whispers of pressure; the other, tons.

In construction these two gauges are poles apart; but in performance they are exactly alike: Both are designed and built, as only Marsh can make them, to do their job right year after year.

This kind of performance is common to all members of the big Marsh family of gauges running into hundreds of pressure ranges, types, styles and functions. Select the *proper* Marsh gauge for your condition and you have chosen the *best*.

MARSH INSTRUMENT COMPANY

Sales affiliate of
JAS. P. MARSH CORPORATION, DEPT. G, SKOKIE, ILL.
Export Dept.: 155 E. 44th St., New York



Marsh "MASTERGAUGE" the aristocrat of pressure gauges

Ask for catalog covering Marsh products which include: A full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam heating and refrigeration specialties including the Electrimatic line of refrigeration water regulators and solenoid valves.

MARSH GAUGES

THE STANDARD OF ACCURACY



Good fasteners cost little why pay less?

The REAL cost of a fastener is in terms of the final product cost.

But some people *will* cut corners on that small *first* cost—and end up with a whopping *big* cost in assembly.

Why take a chance on an inferior fastener?

**Scovill Makes
Good Fasteners**

Recessed Head Screws • Sems.
Tapping Screws • Standard
Machine Screws • Special Cold
Headed Parts



SCOVILL FASTENERS

Industrial Fastener Sales, Waterville Division
Scovill Manufacturing Co., Waterville 14, Conn.

Montclair, N.J. • Detroit • Wheaton, Ill.
Los Angeles • Cleveland • San Francisco

You Can't Buy Safety

(Continued from page 78)

ferent type cage than had been previously used, and a simplified method of replacing bulbs through the use of a ring that could be removed and reclamped by hand instead of by pliers. These changes were made, the new drop cords were safer and were simpler to use.

One of the most interesting aspects of the Norton safety program is the safety shoe campaign, instituted by the safety department and given a big boost by a suggestion from the purchasing department. The effort was aimed directly at the individual, in down-to-earth style. Among the advantages pointed out was the diversity of shoes available. "They look well," said an article in the Norton Spirit, the company's house organ. "There is a selection of 24 styles from which to choose. Some are designed for rough, heavy work. Others could be worn to church and be right in style. No matter what you do, there's a safety shoe for you."

Purchasing, whose job it was to buy the shoes, suggested to management that it subsidize shoe purchases by employees to the extent of one dollar a pair, describing the action as a form of "foot accident insurance". The idea was adopted on a limited basis to attract new customers during the three months that an intensive safety shoe campaign was conducted. In this period, nearly 1,000 pairs were sold. At the end of the campaign, the subsidy was removed, but Norton workers still buy the shoes at cost.

Proper fitting of shoes by a factory trained member of the safety engineer's office reduced complaints of uncomfortable shoes to practically zero. Many workers who formerly "couldn't wear safety shoes" now find that a properly fitted safety shoe is as comfortable as any other. In the period since the campaign, the sale of shoes has held closely to an average of 100 pairs a month.

Norton's success in promoting safety up to now has been little short of inspiring, and the "human approach" has not been the least responsible factor. There is understanding between management and employees that they both want the company to be a safer, better place to work. That type of mutual understanding—basic to almost any operation—exists between the various departments of the company and has contributed greatly to the achievement of the ideal.

For Savings



Specify

Darnell CASTERS

If you want maximum floor protection, economy and efficiency Demand Darnell Dependability...Made to give an extra long life of satisfactory service

Free Manual

DARNELL CORP. LTD.

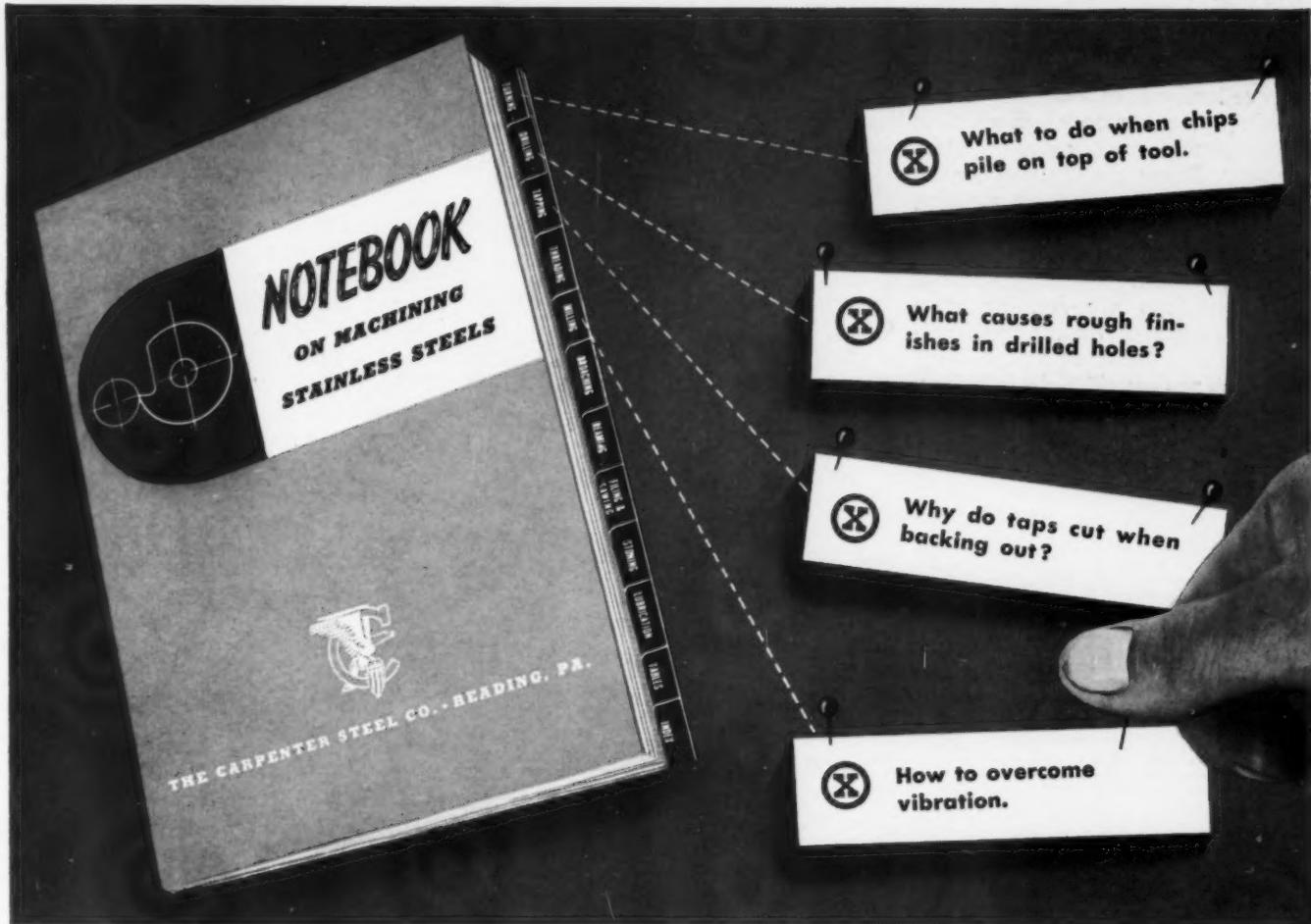
LONG BEACH 4, CALIFORNIA

60 WALKER ST., NEW YORK 13, N.Y.

36 N. CLINTON, CHICAGO 6, ILL.



MARKS THE SPOTS



Where You Solve Many Machining Problems with a 3¢ Stamp!

Finding the right answers to chatter marks, poor tool life or off-tolerance work isn't always as easy as you'd like it to be.

Because of that, because of the need for more and more information to help machinists overcome Stainless produc-

tion problems, Carpenter has published this "NOTEBOOK on Machining Stainless Steels". It is just one of our services aimed at helping you take the problems out of Stainless production.

If you would like a personal copy of the NOTEBOOK, just call your nearest

Carpenter representative. He will be glad to give you a copy, if you don't already have one. And in the shop, he can give you real help on specific jobs that are unusual or troublesome. For training programs, the NOTEBOOK is available at 50¢ per copy.

The Carpenter Steel Company, 182 W. Bern St., Reading, Pa.
Export Department: Woolworth Bldg., New York 7, N.Y.—"CARSTEELCO"

Carpenter

STAINLESS STEEL

takes the problems out of production



For Easy-to-Use Stainless Call Carpenter. Warehouses in principal cities throughout the country.

Personnel for Profits

(Continued from page 82)

millions of dollars per year for the company. It has proven, also, that these earnings have been several times the total expense of operating the purchasing department. The cost reductions of one buyer are running at the rate of more than three-quarters of a million dollars per year. There are eighteen buyers whose cost reductions are running at the rate of more than one hundred thousand dollars per year. There are seventy-five buyers whose cost reductions are running at a rate in excess of their annual salary.

An interesting sidelight has been that *those plants which are apparently heavily staffed are showing the big profit*. Over half the plants are showing cost reductions equal to at least four times the expense of operating the purchasing department. And yet we must admit that this program is only now beginning to get under way on a company-wide basis. We have been able to prove that the most successful plants at this sort of work are able to keep up their cost reductions

year after year. We are harvesting a new crop every year from the same field.

Convincing Management

What do you think would be the result of such a program? Certainly it has made department performance supersede department expense in importance. Certainly it has highlighted the need for higher-caliber buying personnel, even at higher salaries, if need be. Most certainly, it has proven that investment in additional personnel of the right type can pay big dividends.

This sort of program will not tell you how big the purchasing department should be, but it will give you an excellent clue as to whether the department should be bigger or smaller.

Now let's go back and review what we have said:

The purchasing department is apt to be considered only as a clerical function, unless it can demonstrate and dramatize its potential contribution to profit. If the purchasing department is considered to be only a clerical and service organization, it naturally follows that the size of the department should be cut

to the lowest level which can do an acceptable job of clerical and service work. However, the profit-making function of purchasing can be discharged only after personnel has been provided to care for clerical and service functions. Therefore, small increases in personnel of the right kind may provide large increases in profit.

The purchasing agent's job is to find the point of diminishing returns—the point at which additional personnel will not provide increases in profits equal to the increase in expense. It is then the purchasing agent's job to sell to management the value of additional personnel, if necessary, to bring the purchasing department up to this point. In order to demonstrate this need to management, it is very important to provide tangible evidence of the purchasing department's potential contribution to profit. The best way to do this is through a well-organized cost reduction program.

Therefore, I recommend to you that you seriously consider the value of a cost reduction program in your purchasing department to help you demonstrate to your management how big your purchasing department should be.

NAMEPLATE PROBLEMS?

Send for this Manual of...

MEYERCORD
DECAL NAMEPLATES

Tested, Proven ways to Solve Nameplate and Marking Problems on any Surface

The most useful nameplate manual ever offered! In full color, it shows hundreds of uses for durable, washable Decal nameplates—as trademarks, instructions, charts, safety information or diagrams—in all sizes, colors and designs. Application is fast, easy and economical at production line speeds. On metal, glass, wood, china, plastics, leather, rubber, crinkle—curved, flat or flexible surfaces, Meyercord Decals provide permanent product identification at low cost.

FREE!

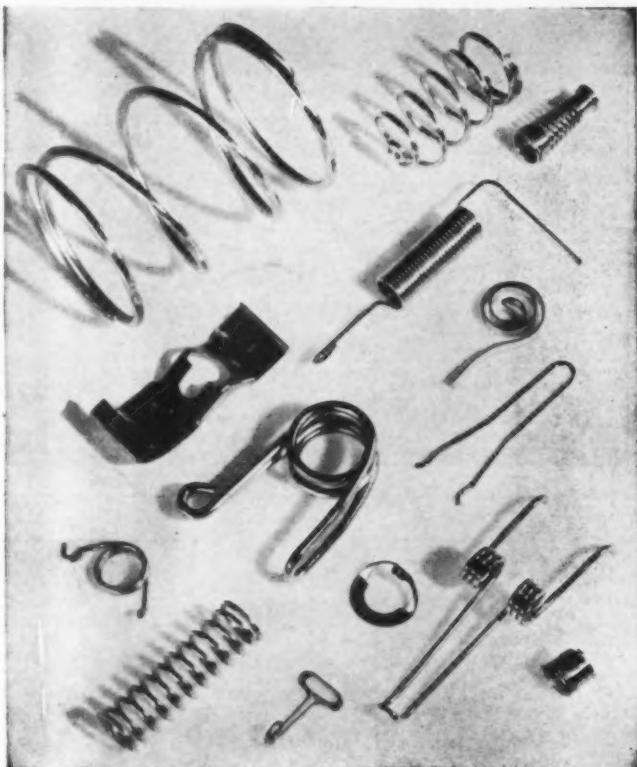
Mark-It Manual
MEYERCORD
Decal Name Plates

THE MEYERCORD CO.
World's Largest Decal Manufacturer
5323 W. LAKE ST. CHICAGO 44, ILL

WRITE FOR YOUR
FREE COPY
BUSINESS LETTERHEADS,
PLEASE, DEPT. 36-12

IDENTIFY • ADVERTISE • DECORATE

Coil
Spring
Says...



• It doesn't pay to take chances with functional parts. The best is none too good where the performance of your product depends on the spring. With U. S. Steel Wire springs you are assured of the same high quality standards that you demand for yourself in your own manufacture. Why not consult us about your spring requirements now!

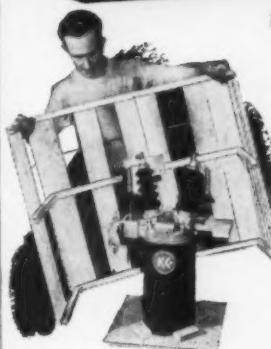
No order too large or too small

The U. S. STEEL WIRE SPRING Co.
7800 FINNEY AVE. • MICHIGAN 1-6318
CLEVELAND 5, OHIO

DECEMBER, 1950

Want Additional Product Information? See Page 19.

TYPICAL USERS SAY THIS ABOUT Wirebounds

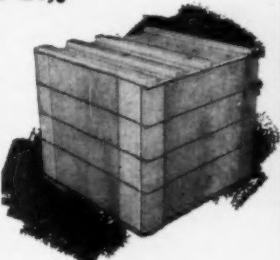


DAMAGE CLAIMS SLASHED

Porcelain breakage and oil leaks due to rough handling and "upside-down" loading plagued automatic circuit recloser company. User reported these findings: Wirebound Crate absorbed shocks, eliminated loading errors, drastically reduced damage claims; shipping room economies obtained through lower initial cost and faster assembly. Loads carried: 65 and 275 lbs.

EXPORT WEIGHT REDUCED 24%

By using specially designed Wirebounds with internal packing which permits a knocked-down dehumidifier to be shipped safely under export conditions, this overseas shipper reports considerable savings in both cubage and weight; old container weighed 150 lbs. packed, Wirebound weighs but 115 lbs. packed. Twisted wire closure also eliminates pilferage.



PACKING TIME CUT 55%

Medium-size company reports annual savings just short of five figures in packing and shipping costs since switching to Wirebounds for its line of gasoline-driven generators, pumps and blowers. One Wirebound fits all units. Assembly time was cut 40%, packing time 55%, tare weight from 80 to 45 lbs.

choose your
course of action

Wirebound
BOXES & CRATES

- Send me general information . . . complete descriptive book titled "What to Expect from Wirebounds."
- Send me specific information . . . tear sheets of case histories of packing products similar to mine.
- Give me direct action . . . send a sales engineer to show the advantages of Wirebound packing for my own product.

NAME _____ POSITION _____

FIRM _____

STREET AND NUMBER _____

CITY _____ ZONE _____ STATE _____

OUR PRODUCT IS _____ IT WEIGHS _____

mail now to

WIREBOUND BOX MANUFACTURERS ASSN.

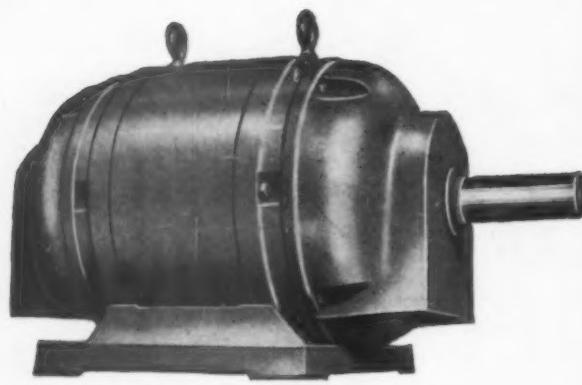
Room 1153 • 327 S. LaSalle St.

Chicago 4, Illinois

Users names on request.

VALLEY BALL BEARING MOTORS

STAY ON THE JOB... LONGER



When specifying the power unit for your machinery, bear these exclusive VALLEY features in mind!

- Specifically designed for 'round-the-clock' duty in high temperatures.
- Drip proof and splash proof, semi-enclosed construction protects motor from harmful liquids and flying particles.
- Fully enclosed ball bearings reduce friction 75% to provide a saving in power.
- Built in $\frac{1}{2}$ to 75 horse power sizes for wide adaptability in your power planning.

VALLEY Motors, stay on the job longer, even under heavy and continuous power demands. Thus for economical power that will last the life of your equipment — always specify VALLEY.



TOTALLY ENCLOSED FAN COOLED

The latest development in Air-Cooled, Ball Bearing motors. Totally enclosed to assure protection against dripping or splashing liquids, metal chips, and damaging dust. 2 to 60 h. p.

Write For Descriptive Literature.

VALLEY
ELECTRIC CORPORATION
4221 FOREST PARK BLVD. • ST. LOUIS 8, MO.

ABBOTT BALLS

do the job

right

HERE



ABBOTT BEARING BALLS make lawnmower blades cut smoothly and accurately — faster and with less effort. Every Abbott Ball — DEEP HARDENED with a mirrorlike, glass hard finish — is shock resistant — maintains close adjustments between whirling blades and cutting bar. Use ABBOTT ... the all round ball.



THE ABBOTT BALL COMPANY
15 Railroad Place, Hartford 10, Conn.



ARISTOCRAT of WORK BENCHES

... built for men accustomed to the finest tools and equipment

We "pulled out all the stops" when we designed the HALLOWELL Cabinet Bench, giving it more "custom" features than any other stock bench we know of. All-steel construction, choice of top materials, ample storage space, standardized units, interchangeable accessories, and trim good looks are just a few of its advantages. Bulletin 702 tells the story. Write for your copy today!

HALLOWELL
SHOP EQUIPMENT OF STEEL
-SPS- STANDARD PRESSED STEEL CO.
JENKINTOWN 31, PENNSYLVANIA

East and Midwest,

2 modern

**ALCOA PLANTS MAKE
the best
ALUMINUM DIE CASTINGS
you can buy**



Your phone book lists the nearest Alcoa sales office under "aluminum". For prompt quotation, technical books and help based on 62 years of aluminum knowledge . . . call there or write ALUMINUM COMPANY OF AMERICA, 1906-M Gulf Building, Pittsburgh 19, Pa.

**ALCOA Aluminum
DIE CASTINGS**



**ROLLED
STEEL
PIPE
FLANGES**

for all types
of service

INQUIRIES INVITED

7796



The Baldwin Locomotive Works, Standard Steel Works Division, Etna, Pa., U.S.A.
Offices: Chicago, Cleveland, Houston, New York, Pittsburgh, San Francisco, St. Louis, Washington.

BALDWIN
STANDARD STEEL WORKS DIVISION

THE TOUGHER THE CUTTING JOB...



...THE BETTER THE OPPORTUNITY FOR

abrasive cutting

Some people do it the hard way, but a smart operator finds a better way . . . Abrasive Cutting, for instance.

Whether it's steel, glass, non-ferrous metals, ceramics . . . tubing, shapes, or bar stock . . . Allison Wheels slice thru the material at high speeds, cleanly to a few thousandths . . . and with little or no after-finishing. An Allison A.C.E. (Abrasive Cutting Expert) can recommend the wheels and the equipment best suited to your needs.

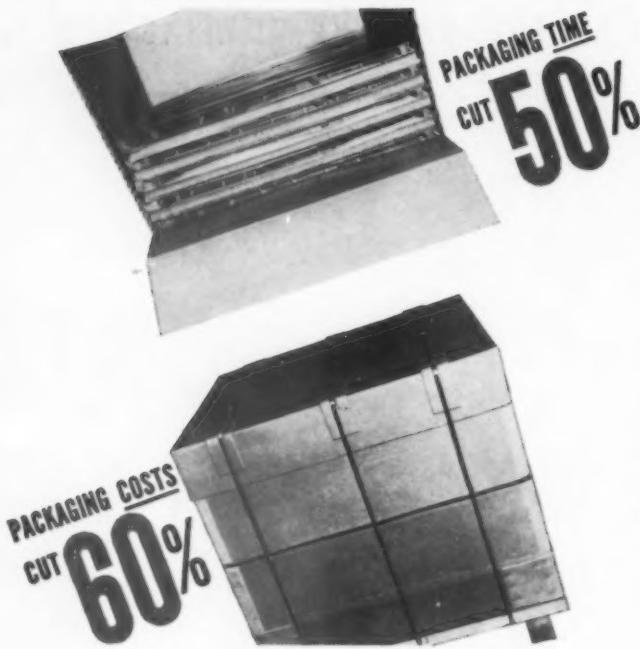
We like tough jobs

. . . consult us about yours!

THE ALLISON COMPANY

257 Island Brook Ave.
Bridgeport 8, Conn.

Allison
ABRASIVE CUTTING WHEELS



**Read how this
manufacturer makes
important savings with
STANLEY STEEL STRAPPING**

Here's another typical example of the way Stanley Steel Strapping saves time and money shipping almost any product. Keystone Metal Moulding Co. of East Detroit cut packaging time 50% from former methods—slashed packaging costs a full 60%. Change was from small cartons to large carton on a skid. New carton is closed, reinforced and bound to skid with Stanley Steel Strapping.

Facts like these from manufacturer after manufacturer who has switched to the Stanley Steel Strapping System tell a story you can't afford to ignore. Whatever your product, check on the savings Stanley Steel Strapping can make in *your* Shipping Room. Write for details or have a Stanley representative call now. The Stanley Works, Steel Strapping Div., 144 Lake Street, New Britain, Connecticut.

Offices in Principal Cities.

STEEL STRAPPING AND CAR BANDING SYSTEMS

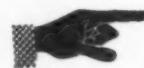
STANLEY
Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL



Idaho White Pine is one of the genuine white pines. It shares those same qualities which have made white pine a preferred building material since the earliest Colonial days.

Soft of texture, straight of grain and free of any tendency to split or sliver, Idaho White Pine is famous for workability. Stock and specify it with confidence because it is manufactured, seasoned and graded to the high and carefully maintained standards of Association mills.



For more information about Idaho White Pine, send for free illustrated 64-page book. Address

WESTERN PINE ASSOCIATION
Yeon Building • Portland 4, Oregon

**THESE ARE THE
WESTERN PINES**

**Idaho White Pine,
Ponderosa Pine, Sugar Pine**

**THESE ARE THE
ASSOCIATED
WOODS**

**Larch, Douglas Fir, White
Fir, Engelmann Spruce,
Incense Cedar, Red Cedar,
Lodgepole Pine.**

WOODS FROM

THE WESTERN PINE REGION





ASSURE PERMANENT IDENTIFICATION

LOW-COST metal marking tags are now available to provide permanent identification for subassemblies, fabricated products, steel stocks, electrical wiring, etc.

Metal tags are unaffected by repeated painting, plating, extreme weathering, corrosive atmospheres, heat, abrasion, and they can indicate serial numbers, ownership, patent notices, sizes or other data.

Trade marks, instructions, shipping notices and labels for inventory stocks can be attached for permanent record.

Tags are available in sizes from $\frac{1}{4} \times \frac{1}{4}$ " to 6×6 " in aluminum, brass, steel, zinc, tin plate, Monel and other sheet materials. Holes for quick tag attachment can be made to meet individual specifications.

Write today for complete catalog.



THE METAL MARKER MFG. CO.

1430 E. 40th STREET

CLEVELAND 3, OHIO

RED STREAK
Sealing Tape

Always in the familiar red and yellow candy striped package

No other form of closure gives so much for so little!

The Brown-Bridge Mills, Inc., Troy, Ohio
Those Gumming Specialists

seals it **RIGHT**

DON'T SHUT-DOWN MACHINES FOR FREQUENT GLOVE CHANGES!



USE JOMAC LONGER-LASTING WORK GLOVES



FLEXIBLE • REVERSIBLE (FIT EITHER HAND)
HEAT-RESISTANT

7 Times the Wear in Every Pair

JOMAC WORK GLOVES
C. WALKER JONES CO.
6145 N. Lambert St. Philadelphia 38, Pa.

LETTERS . . .

ARE ORAL ORDERS BINDING?

As subscribers to the PURCHASING Magazine, we have taken a great deal of interest in the monthly articles dealing with the legal aspects of purchasing.

We are wondering if you have ever published a decision on the validity of a purchase order which is given verbally. Particular reference is made to orders given over the phone and specific purchase order numbers being assigned. Are such orders binding to both the buyer and the seller?

C. H. Willman, Purchasing Agent
Electrical Utilities Co.
La Salle, Ill.

- Leo T. Parker, who conducts our series on purchase law writes:

"Modern higher courts have very consistently held that verbal orders and contracts for the purchase of merchandise, including those given over the telephone, are valid and enforceable, provided the complaining party proves to the court and convinces the jury the exact contents of the contract and conversation. And in addition, the value of the merchandise must not exceed \$2,500, although if the value of the merchandise exceeds this amount the contract still may be valid if the purchaser either pays a down payment or accepts delivery of all or part of the merchandise.

Quite obviously, if the purchaser either makes a down payment or accepts delivery of all or part of the merchandise there can, ordinarily, be no controversy as to whether a contract was made over the telephone. Hence, assuming that the value is less than \$2,500, as involved merchandise, it can be said with certainty that such a contract is valid provided both the buyer and seller admit details of the conversation which results in a valid contract.

But if the seller denies validity of the contract, the purchaser must in some manner convince the jury that actually a valid contract was made. This may be accomplished by having disinterested witnesses hear the conversation, or recording it legally and with proper witnesses, or by having

witnesses hear the conversation after the contract was made and in which the seller admits the making of the original contract.

Hence, in view of the usual obstacles when attempting to prove that a seller made a valid contract over the telephone, it is very advisable that the purchaser have the seller send confirmation of the contract. This can best be accomplished by the purchaser writing a letter in which is listed in detail the conversation, and having the seller sign the confirmation and return it to the purchaser, who also should sign and date the same."

To the non-legal mind, this seems to boil down to the fact that orders given and accepted over the telephone are actually binding, but that proving an order did exist, if this becomes a subject of controversy, requires specific evidence. Assigning a specific purchase order number might be considered as contributing evidence, but this would also have to be substantiated.—Ed.

WELCOME, STRANGER!

What are the chances of sparing us duplicate copies of your welcome folder as mentioned in the September issue of Tell publication?

Elmer S. Lipsett
S. D. Warren Co.
Boston 1, Mass.

- Two copies have been mailed you.—Ed.

SPEAKER'S STAND

In your September issue of PURCHASING, Office Equipment and Supplies section on page 166 you describe a speaker's stand that has become available.

Would you be good enough to give me the manufacturer's name?

W. W. Peterson, Office Manager's Dept.
The Procter & Gamble Co.
Cincinnati 1, Ohio

- The Ideal School Supply Co., 3820 Birkhoff Avenue, Chicago, Ill.—Ed.

SOUND WITH SLIDES

The Purchasing Opinion Survey (page 77, October issue) on the effectiveness of visual sales presentation contains some of the most interesting material that has come to my attention in a long time.

It was so interesting that I am calling it to the attention of the National Audio-Visual Association.

However, it did contain one disappointment, which, unhappily, makes it difficult for us to use specifically. We are the prime manufacturers of sound slidefilm projectors, which are sold, primarily, in the sales promotion field. We were, therefore, disappointed to find that sound slidefilm was not listed separately in your question number 5. Is there any way in which you could get the answer which would interest us? In your opinion, would the purchasing people have listed sound slidefilm under the general category of slidefilms, or would they have remembered them as sound movies, as some people do?

R. L. Shoemaker, Sales Manager
Audio-Visual Division
Operadio Manufacturing Co.
St. Charles, Ill.

- We are sorry that sound slidefilm was not separately listed in our query, but it does not seem practicable at this time to go back to several hundred respondents on this specific question, since the general conclusions have been established in the original survey.

Our own interpretation of the results would be that the use of sound just about doubles the effectiveness of the presentation. This is directly shown in the balloting on sound and silent motion pictures. The slidefilm is rated practically even with the silent movie and it would seem logical to conclude that the addition of sound would have a comparable effect in both cases.—Ed.

BOUQUETS

PURCHASING is a magazine we look forward to receiving each month for its excellent arrangement of articles and advertising matter is particularly interesting to buyers.

Halsey E. Hubbard, Purchasing Agent
Consolidated Machine & Tool Corp.
Rochester 10, N. Y.

Prefer PURCHASING to other publications.

R. A. Lothamer, Purchasing Agent
Canton Forge & Axle Works
Poor & Co.
Canton, Ohio

The article "Expediting—As the Expeditee Sees It," page 96 (October) is the best I have ever read on the subject.

A. B. Swartz, Purchasing Agent
Safety Car Heating & Lighting
Co., Inc.
New Haven, Conn.

Quality control...

another feature of Accurate service

A portion of the elaborate quality control equipment in use at Accurate.

**... and it lowers
the overall cost of your springs**

THE uniformly high quality of Accurate springs . . . their rigid adherence to the customers specifications . . . are the natural result of the combination of skilled springmakers and the most modern springmaking machines *plus* painstaking quality control procedures. Quality control is just one of the features of Accurate service. Certainly, we could "get by" without it like so many other spring manufacturers do. But we have found it pays off handsomely for our customers *and* ourselves. The customer gets uniformly good springs with savings in time and money because there are fewer rejects and assembly runs more smoothly. We come out ahead because our customers are pleased and we're not subjected to a flood of substandard "returns." In the overall, it means lower costs for everyone.

*Be sure the
springs you
buy are
Accurate*

The best way to find out what we mean is to give us a trial. For a quotation just send a drawing and specifications or, if you prefer, Accurate engineers will be pleased to give their assistance in developing new or improved design. ACCURATE SPRING MFG. CO., 3825 W. Lake St., Chicago 24, Illinois.

Write for your copy of the new revised Accurate Handbook of Technical Data on Springs. This booklet has been out of print for some time and if you have previously requested a copy and have not received it, we would appreciate your asking again.



*Springs
Wire Forms
Stampings*

*Accurate
Springs*

BUYER'S & SELLER'S MART

Contract Work • Equipment For Sale • Employment and Business Opportunities

RATES

Undisplayed (set solid)	90¢ line
Positions Wanted	45¢ line
Displayed	\$8.50 inch

REQUIREMENTS

Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge. Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

Send orders to: CLASSIFIED DEPARTMENT • PURCHASING • 205 E. 42nd St., New York 17, N. Y.

POSITIONS WANTED

PURCHASING — Fifteen years experience in industrial and wholesale purchasing of supplies, equipment, machines. Can maintain sound supplier relationships. College graduate. Draft Exempt. Complete resume through Box 1284, PURCHASING, 205 E. 42nd St., New York, N.Y.

PURCHASING IS MY BUSINESS

If your business needs an experienced Purchasing Agent with 16 years experience in the manufacturing field, it would be good business to get in touch with Box 1280, PURCHASING, 205 E. 42nd St. New York 17, N.Y.

Executive Assistant, 32, 11 years experience in Industrial and Plant Engineering, Production, Materials Handling, Equipment, Procurement and Installation. Have directed work of others and can assume responsibility. Prefer small plant in North Central States. Box 1281, PURCHASING, 205 E. 42nd St. New York 17, N.Y.

FOR SALE

FOR SALE: One 20-cylinder dual oxygen manifold complete with high and low pressure gauges and regulators; one 6-cylinder dual oxygen manifold equipped complete as above. Box 1278, PURCHASING, 205 E. 42nd St. York, 17, N.Y.

HELP WANTED

We require the services of an experienced man who is capable of supervising procurement, priorities and outside production of a manufacturing business established 15 years. Write— Meletron Corporation 950 North Highland Avenue Los Angeles 38, Calif.

Buyer for Manufacturing Plant. Must have a minimum of five years experience buying steel and non-ferrous metals in the Los Angeles market, both war and peace production. Box 1283, PURCHASING, 205 E. 42nd St., N.Y. 17, N.Y.

BUYER WANTED — Chemical background necessary for position as Buyer in Purchasing Department of Chemical Division of well known electronics manufacturing concern. Recent college graduate with some business experience is preferred for this position. Reply, giving education, experience, salary desired, military status, etc., to Box 1279, PURCHASING, 205 E. 42nd St. New York 17, N.Y.

We require substantial quantities of 5/8" Wooden Dowels measuring 18 to 24" in length to be plain, straight cut off both ends. Your job lots or surplus would be satisfactory. Wire Box 1282, PURCHASING, 205 E. 42nd St., New York 17, N.Y.

FOR SALE

FUNCTIONALLY DESIGNED FURNITURE

Matching desk and bookcase of solid Honduras Mahogany throughout. Original design and hand made by a hobbyist. The desk top and one side are made from solid two inch material. There is also one filing drawer and one regular drawer, both with roller bearing extension drawer slides. The bookcase has three shelves and a full length drawer in the top.

Dimensions:

Desk

Top: 25" x 48"
Cabinet 13" x 24"

Bookcase

Height: 42"
Length: 48"
Shelves: 11 1/4" wide and full length.

Prices:

Desk \$90.80
Bookcase: 44.29

Prices do not include shipping charges.

G. B. CAMPBELL

393 Knoop Lane
Eugene, Oregon

Cellophane Adhesive Tape CLOSEOUT

1000 rolls $\frac{1}{8}$ " - $\frac{1}{2}$ " x 2592" 62¢-70¢ roll.
Send \$1.50 for samples

U. S. Screen Art
39 Alabama Ave.
Brooklyn 7, N.Y. HY 8-3110

ATTENTION PURCHASING AGENTS

We want to BUY your old, discarded:— TABULATING CARDS (I.B.M. or Remington-Rand).

We will pay up to \$80.00 PER NET TON for Manila Cards. Solid Colored Cards, red, blue, etc., \$50.00 PER NET TON. We will assort the colored cards from the Manila.

Due to the Pulp shortage, we are now using TABULATING CARDS as a substitute for Pulp in the manufacture of our paper. Upon receipt of your cards, they are completely mutilated and beat back into Pulp. Thus, records are completely destroyed.

Write and tell us about what quantity of Scrap Tabulating Cards you have — whether a minimum C/L of 24,000 lbs., or a few 100 lbs. Or, ship your accumulation by Rail Freight, classified as: "scrap or waste paper — NOIBN"; tied or wired in bundles, or dumped into burlap bags. We also buy Manila Time Cards.

United States Paper Mills, Inc.
Chambersburg, Penna.

PAINTS OVER RUST!

RUSTREM STOPS RUST!

No priming, scraping, brushing



Rustrem paints right over rust. For stacks, fire escapes, bridges, fences, flashings...all metal. Farm, auto, marine, machinery. Black and aluminum.

SPECO, Inc. 7308 Associate Ave., Cleveland 9, Ohio

Nepsco

NEW ENGLAND

PRESSED STEEL COMPANY

Contract Manufacturers since 1914
of "Trouble Free"

METAL STAMPINGS

SPECIALTIES — APPLIANCES

For Industrial and Domestic Users

P. O. BOX 29

MASSACHUSETTS

NATICK,

Wanted Purchasing Agent

Screw Manufacturer needs Purchasing Agent. Must have long experience and established contacts on bright basic steel and brass wire including cold rolled strip stock. Excellent pay. Reply by letter only, giving full particulars.

STRONGHOLD SCREW PRODUCTS, INC.

216 W. Hubbard St.
Chicago 10, Illinois



Bill Miller, Asst. Gen. Mgr. of Sales, Jones & Laughlin Steel Corp. (right), calls on George L. Davis, Purchasing Agent, National Electric Products Corp., Pittsburgh.

Miller of Jones & Laughlin says,
“Purchasing Agents are important”

“Purchasing Agents are very important—for it is through these men that you may get your only opportunity to have your products considered,” says William (Bill) Miller, Pittsburgh District Sales Manager, Jones & Laughlin Steel Corp.

Mr. Miller has been associated with the Jones & Laughlin sales organization for over 35 years. He speaks from long experience when he says that through the Purchasing Agents “you may get your only opportunity to have your products considered”. Make the most of that opportunity! Tell your sales story directly to the P. A. in his own magazine—*Purchasing*.

Tailored to the exact requirements of the most important functional group your salesmen call on, *Purchasing* is the one magazine the P. A. is sure to get, the one place your advertising message is sure to reach him.

Month after month, *Purchasing* opens the door for you to the men who control 85% of industry's purchases. If your business is to sell the leading industrial organizations, there is no better sales aid than consistent advertising in *Purchasing Magazine*. Get full details. Write *Purchasing*, 205 East 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Dallas, Los Angeles.

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

A CONOVER-MAST PUBLICATION

ABC

Advertisers IN THIS ISSUE

A

Abbott Ball Company, The	296
Accurate Spring Mfg. Co.	301
Acme Steel Co.	146
Acushnet Process Co.	261
Adam Electric Co., Frank	251
Air Express Div., Railway Express Agency, Inc.	160
Allen Mfg. Co.	142
Allison Co.	297
Aluminum Company of America Die Castings	297
Screw Machine Products	36
American Brake Shoe Co., National Bearing Div.	191
American Brass Co., The	213, 219
American Chain Div.	130
American Chain & Cable Co., Inc.	68, 130, 220, 256
American Optical Co.	52
American Rivet Company	154
American Screw Company	237
American Smelting & Refining Company	147
American Steel & Wire Company	45, 119
Anaconda Copper Mining Co. & Subsid. Cos.	213, 219
Anchor Post Fence Co.	140
Anti-Friction Bearing Distributors' Association, The	151
Armstrong-Bray & Co.	244
Arrow-Hart & Hegeman Electric Co., The	150
Associated Spring Corp.	235
Atkins & Co., E. C.	62
Atlantic Steel Castings Company	254

B

Babcock & Wilcox Tube Co.	145
Bakelite Division	193
Baldwin-Duckworth Division of Chain Belt Company	275
Baldwin Locomotive Works, The	132, 133, 297
Baltimore & Ohio Railroad, Freight Dept.	200
Barnes Co., Inc., W. O.	246
Barnes Co., Wallace	235
Barnes Co., Ltd., Wallace, The	235
Barnes-Gibson-Raymond	235
Bassick Co., The	308
Bauer & Black	242
Bay State Tap & Die Co.	260
Bead Chain Mfg. Co.	216
Beall Tool Div., Hubbard & Co.	306
Bemis Bro. Bag Co.	29
Bethlehem Steel Co.	271
Billings & Spencer Co.	232
Blake & Johnson Co., The	237
Blaw-Knox Co.	280
Bond Foundry & Machine Co.	276
Boorum & Pease Company	177
Boston Woven Hose & Rubber Co.	44
Bridgeport Brass Co.	273
Bristol Brass Corp.	243
Brown Company	169
Brown Bag Filling Machine Co.	244
Brown-Bridge Mills, Inc.	299
Brownville Paper Co.	168

C

Camcar Screw & Mfg. Co.	237
Campbell Chain Company	274
Carborundum Company	187
Carnegie-Illinois Steel Corp.	45
Carpenter Steel Company, The	293
Central Paper Company	272
Central Paper Company, Inc.	138
Central Screw Co.	237
Century Electric Company	3
Chain Belt Co., Baldwin-Duckworth Div.	275
Champion Lamp Works	238
Chase Bag Co.	155
Chase Brass & Copper Co., Inc.	265
Chester Hoist Div., National Screw & Mfg. Co.	230
Cities Service Cos.	149
Clark Industrial Truck Div., Clark Equip. Co.	27, 28
Classified Advertising Section	302
Cleveland Cap Screw Co.	214
Cleveland Chain & Mfg. Co.	50
Cleveland Container Co., The	252
Cleveland Twist Drill Co.	281
Cold Metal Products Co.	121
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div.	287

Colson Corp.	134
Columbia Steel Co.	45, 119
CONOVER-MAST PURCHASING DIRECTORY	290
Consolidated Business Systems, Inc.	170
Consolidated Electric Lamp Co., Champion Lamp Works	238
Container Corp. of America	129
Continental Diamond Fibre Co.	56, 57
Continental Screw Co.	224, 237
Copperweld Steel Co.	277
C-O-Two Fire Equipment Co.	258
Crane Company	14
Crocker-Wheeler Div., The Elliott Co.	152, 153
Crucible Steel Co. of America	239

D

Darnell Corp., Ltd.	292
Davidson Rubber Co., The	254
Dissiton & Sons, Inc., Henry	12
Dodge Mfg. Corporation	54
Dolge Co., C. B.	266
Dravo Corp.	134
Dunbar Bros. Co. Div.	235

E

Eaton Mfg. Co.	185
Eberhard-Faber Pencil Co.	180
Elco Tool & Screw Corp.	237
Electric Auto-Lite Co.	221
Electric Storage Battery Co.	249
Elliott Co., The, Crocker-Wheeler Div.	152, 153
Emery Air Freight Corporation	286
Esleek Mfg. Co.	172
Etching Co. of America	212
Eureka Specialty Printing Co.	172
Ex-Cell-O Corporation	159

F

Fafnir Bearings Co.	61
Federated Metals Div., American Smelting & Refining Co.	290
Ferry Cap & Set Screw Co.	6
Finecraft Products Co.	134
Flexible Steel Lacing Co.	252
Frassee & Co., Peter A.	215
Fuller Brush Co.	148

G

Gair Company, Inc., Robert	202, 203
Gates Rubber Co.	263
General Box Co.	43
General Electric Company Apparatus Div.	32, 33
Lamp Div.	137
General Tire & Rubber Co.	136
Gerson-Stewart Corp.	222
Gibson Co., William D., The	235
Gits Molding Corp.	158
Globe Steel Tubes Co.	259
Goodrich Co., B. F.	4, 199
Goodyear Tire & Rubber Co., Inc.	41
Gould-National Batteries, Inc.	183
Graybar Electric Co., Inc.	66
Great Lakes Screw Corp.	237
Grinnell Co., Inc.	8
Gulf Oil Corp.	195

H

Harnischfeger Corp.	127, 233
Harper Co., The H. M.	237
Hartzell Propeller Fan Co.	40
Herbrand Div., Bingham-Herbrand Corp.	256
Hinde & Dauch Paper Co.	55
Hudson Pulp & Paper Corp.	282
Hy-Pro Tool Company	284

I

Inland Steel Co.	5
Investment Casting Co.	138

J

Jenkins Bros.	4th Cover
Johns-Manville Corp.	143
Johnson Steel & Wire Co., Inc.	234
Jones Company, C. Walker	299

Kaiser Aluminum & Chemical Corp.	283
Kano Laboratories	198
Keasbey & Mattison Co.	48
Kex National Service	31
Keystone Steel & Wire Co.	262
Kimberly-Clark Corp.	37
Koh-I-Noor Pencil Co., Inc.	178

K

Laminated Shim Co., Inc.	236
Link-Belt Co.	11
Lunkenheimer Co.	269
Lyon Metal Products Inc.	217

M

Macwhyte Co.	23
Marsh Corp., Jas. P.	291
Master Electric Co.	211
Metal Arts Co., Inc.	144
Metal Marker Mfg. Co., The	299
Meyercord Company	294
Micro Switch	63
Midwest Piping & Supply Co.	157
Millers Falls Co.	197
Mills Corporation, Elmer E.	139
Milwaukee Dustless Brush Co.	268
Minneapolis-Honeywell Regulator Co.	307
Minnesota Mining & Mfg. Co.	257
Missouri-Kansas-Texas Lines	38
Morris Company, Bert M.	167

N

National Bearing Div., Amer. Brake Shoe Co.	191
National Electric Products Corp.	59
National Forge & Ordnance Co.	10
National Lock Company	237
National Screw & Mfg. Co.	230, 270
National Supply Co., Spang-Chalfant Div.	305
National Tube Company	45
Newark Wire Cloth Co.	288
Nicholson File Co.	21
Norma Pencil Company	174
Norton Co.	17

O

Oakite Products, Inc.	144
Ohio Brass Company	35
Ohio Injector Co., The	65
Ohio Div., Association Spring Corp.	235
Okonite Co.	245
Osborn Mfg. Co.	7
Oxford Filing Supply Co.	172

P

Page Steel & Wire Div.	256
Parker-Kalon Corp.	16, 237
Pheon Manufacturing Company	231, 248
Pittsburgh Plate Glass Co., Columbia Chemical Div.	70
Powell Co., William	223
PURCHASING Magazine	303
Purdy & Co., Inc., A. R.	205

Q

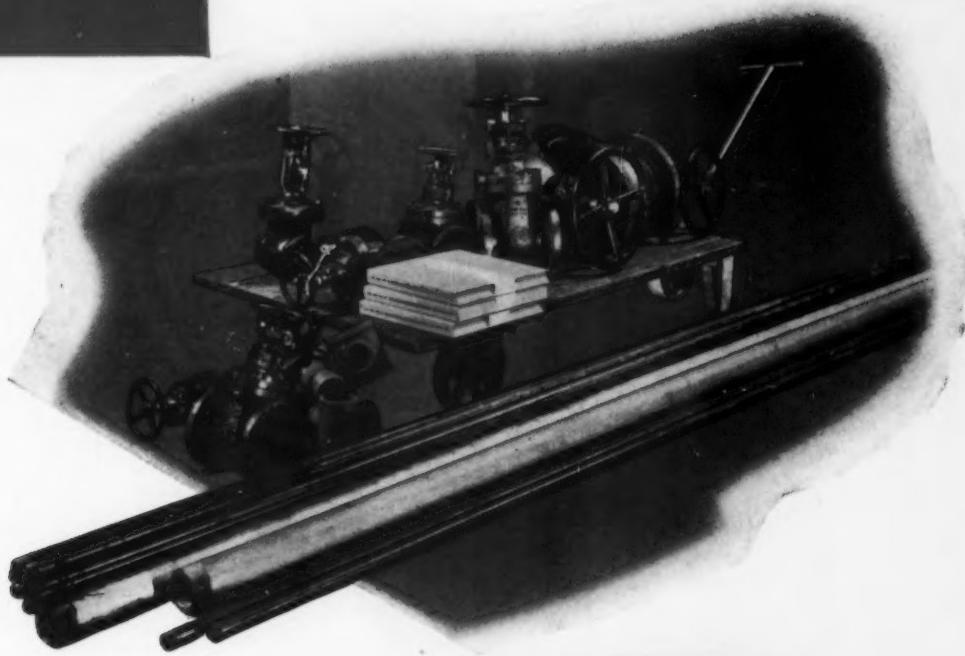
Quaker Rubber Corp.	231
---------------------	-----

R

Railway Express Agency, Inc.	264
Railway Express Agency, Inc., Air Express Div.	160
Randolph Laboratories, Inc.	218
Rathborne, Hair & Ridgway Box Co.	64
Raymond Mfg. Co.	235
Reliance Electric & Engineering Co.	189
Remington Rand, Inc.	171
Republic Steel Corp.	267
Revere Copper & Brass, Inc.	201
Richardson Co., The	34
Ridge Tool Co.	204

YOUR SPANG CW DISTRIBUTOR CARRIES

*the things
you want*



Your Spang CW Pipe Distributor carries the things you want! A complete line of piping materials—a real desire to render fast, complete service.

One of the many complete lines he carries is Spang CW Pipe in black and galvanized finishes, all standard sizes, and convenient uniform lengths. Threads, dimensions, inside and outside surfaces are subjected to rigid inspection, and each length is hydrostatically tested to assure a strong, tight longitudinal weld from end to end.

Next time you need pipe, fittings, fixtures, valves, or other piping material, call your Spang Distributor. During these days of short supply he may not be able to fill your order immediately, but you can depend on him to do everything possible to meet your demands.

SPANG - CHALFANT

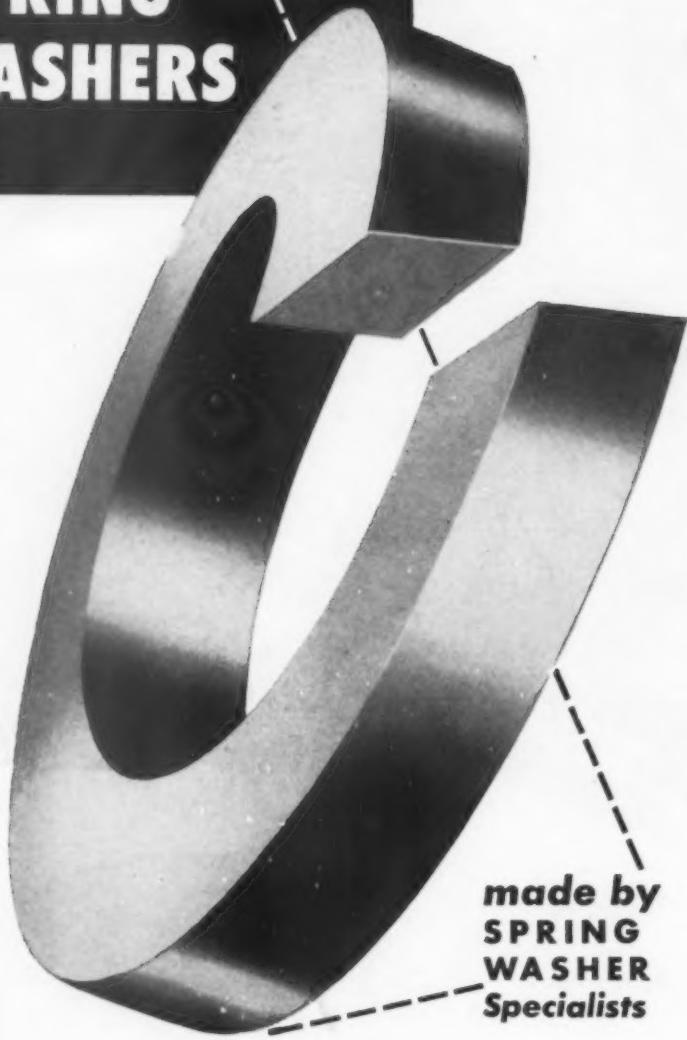
Division of The National Supply Company

EXECUTIVE OFFICES: PITTSBURGH, PA.

District Sales Offices: Atlanta; Boston; Detroit; Houston; Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis.



BEALL SPRING WASHERS



KEEP BOLTED ASSEMBLIES **TIGHT**

BEALL helical SPRING WASHERS have "live action" and constantly exert tightening pressure over a long range. They compensate for ALL causes of looseness including vibration, bolt stretch, wear and breakdown of finish under the nut and bolt head. IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur, Duronze, and other metals.

BEALL TOOL DIVISION of HUBBARD & CO.

160 Shamrock St., East Alton, Ill.



TIGHT
when assembled



TIGHT
in service



TIGHT
after long service

Rising Paper Co.	180
Riverside Metal Company	131
Roberts Rubber Co., Weldon	178
Rockford Screw Products Company	237
Roebling's Sons Co., John A.	30, 135
Rolock, Inc.	285
Russell, Burdsall & Ward Bolt & Nut Company	47
Ryerson & Son, Inc., Joseph T.	72

S

Sawyer & Son Co., The H. M.	250
Scovill Manufacturing Co.	237, 292
Screw Research Association	237
Security Steel Equipment Corp.	176
Shakeproof, Inc.	237
Sheffield Tube Corporation, The	279
Sheppard Envelope Co.	170
Simonds Gear & Mfg. Co.	266
Socony-Vacuum Oil Co., Inc.	123
Solvay Sales Div., Allied Chemical & Dye Corp.	162
Scuthington Hardware Manufacturing Company, The	237
Spang-Chalfant Div., National Supply Co.	305
Speer Carbon Company	154
Sponge Rubber Products Co.	141
Standard Conveyor Company	158
Standard Pressed Steel Co.	244, 296
Standard Register Company	173
Standard Tube Co.	233
Stanley Electric Tool Div.	26
Stanley Works, The	298
Steinen Mfg. Co., Wm.	256
Strathmore Paper Co.	179
Strem Steel Ball Co.	278
Strong Carlisle & Hammond Company	198
Sturtevant Mill Co.	42
Sun Oil Co.	227
Superior Foundry, Inc.	240
Superior Steel Corp.	53
Superior Tube Co.	247

T

Taylor Fibre Co.	51
Taylor Co., Halsey W.	210
Tennessee Coal, Iron & Railroad Company	45, 119
Texas Company	2nd Cover
Thermoid Co.	289
Threadwell Tap & Die Co.	136
Timken Roller Bearing Co.	49
Tower Company, A. J.	284
Towmotor Corp.	216
Tri-Lok Company	134
Triplex Screw Co.	206
Trumbull Electric Mfg. Co.	241
Tube Reducing Corp.	229
Tube-Turns, Inc.	209

U

Uareo, Inc.	175
Udylite Corp.	181
U. S. Radium Corp.	222
U. S. Rubber Co.	148, 207
United States Steel Supply Co.	18, 45
Company	45, 119
United States Steel Supply Co.	18, 45
U. S. Steel Wire Spring Co., The	295
Utica Drop Forge & Tool Corp.	9

V

Valley Electric Corp.	296
Veeder-Root, Inc.	208

W

Wagner Electric Corp.	255
Wales-Beech Corporation	237
Walworth Company	251
Washington Steel Corp.	60
Weirton Steel Co.	161
Western Pine Association	298
Westinghouse Electric Corp.	39, 3rd Cover
Westinghouse Electric Corp., Lamp Div.	225
Wheeler Reflector Co.	46
Whitney Chain Co.	58
Wickwire Spencer Steel Div. of the Colorado Fuel & Iron Corp.	287
Wirebound Box Manufacturers Asso.	295
Wisconsin Motor Corp.	272
Wright Hoist Div.	68
Wrought Washer Mfg. Co.	210

Y

Youngstown Sheet & Tube Co.	125
-----------------------------	-----

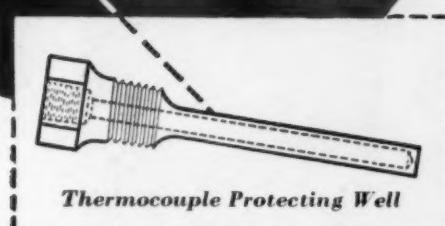


**"...and
The Walls of this
Well are Uniform!"**

THAT'S Honeywell Supplies Man E. R. McCune, of our New York Office, telling a customer the special features of a Brown Precision-Made Protecting Well. First discussed was the *application* . . . then McCune showed the customer the *correct* well for his process.

The engineering "know-how" of an HSM representative can be of real help to you in choosing the correct well, or thermocouple, for your application . . . and you'll be surprised when you learn how much convenience and economy the HSM Plan can add to all of your pyrometer supplies purchasing.

Call in your local Honeywell Supplies Man today . . . for full particulars on the plan that will save you time, money and work. He is as near as your phone! MINNEAPOLIS-HONEYWELL REGULATOR CO., Industrial Division, 4408 Wayne Ave., Philadelphia 44, Pa. Stocks for immediate shipment in Philadelphia, Cleveland, Chicago, Atlanta, Houston, Los Angeles and San Francisco.



Thermocouple Protecting Well

**Advantages of
BROWN PRECISION-MADE
PROTECTING WELLS**

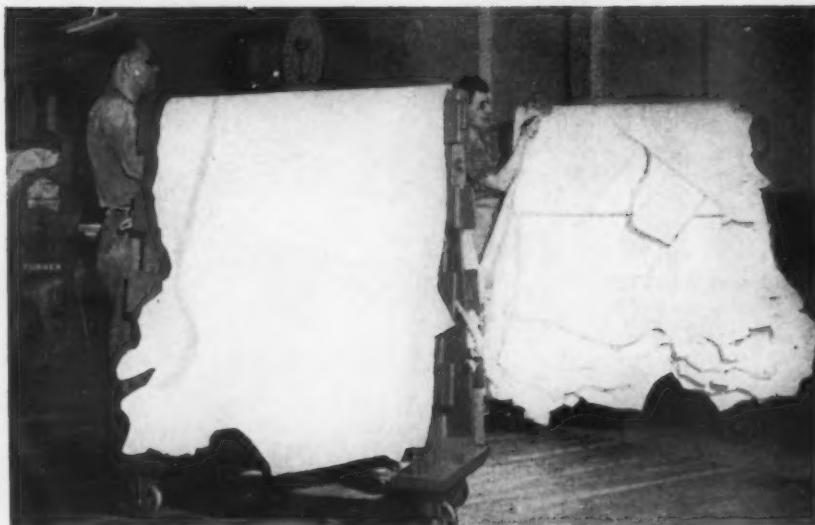
1. Uniform wall thickness of engineered accuracy.
2. A complete line . . . Your assurance of the right well for your application.
3. Made of practically all common metals and alloys . . . of almost any wall thickness, to withstand high temperatures and pressures.
4. Quick delivery . . . stocks maintained at branch offices.



In Rueping's Fond du Lac, Wisconsin, plant—leather is moved from one operation to another on wooden horses or carts equipped with Bassick Casters. Bassick equipment makes Rueping materials-handling cheaper, quicker, and easier.



(Top) Bassick "Series 61" Casters . . . strong steel, swivel, economical. (Center) "Series 99" . . . fully-hardened, steel-bearing raceways, double ball race construction. Extra strength, highest quality at lowest cost. (Bottom) "Series HA" . . . greatest strength and safety for heaviest loads. Forged steel wheel, top and horn plate.



There's profit in materials-handling through the

Reducible 30%!

finds famous leather maker

Fred Rueping Leather Company, and scores of other top concerns, are making *extra profit* by saving on materials-handling with Bassick Casters. It will pay you to investigate the rare cost-cutting chance materials-handling (about 30% of total cost) affords. For, according to cost analysts, the other 70% (wages, taxes, plant overhead, etc.) can't be easily reduced. MORAL: There's *money* in keeping a thrifty eye on the "Reducible 30%."

A money-saving caster for every type of load . . .

Casters are vital to almost every materials-handling operation, because of their flexibility. They can be moved quickly, in *every* direction at *any* time.

Look into *your* opportunities to save time, labor, wear on floors and "rolling stock" with such Bassick aids as "FLOATING-HUB" shock-absorbing casters, position locks, grooved-wheel casters for angle track, the new "Alcore" rubber-tread aluminum wheels, the amazing new "Flying Saucer" caster, etc.

For information on these products, write to THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corp. In Canada: Bassick Division, Stewart-Warner-Alemite Corp., Ltd., Belleville, Ont.



Making more kinds
of Casters . . .
Making Casters
do more

YOU CAN BE SURE.. IF IT'S
Westinghouse



HOW LONG

will the Life-Line bearing last?

As long as comparable periodically lubricated bearings—or longer!

BEARING MANUFACTURERS SAY: "Pre-lubricated bearings have the same life expectancy as periodically lubricated bearings *IF those periodically lubricated bearings are perfectly maintained.*" But how often is a bearing perfectly maintained? Not often enough! That's why Life-Line pre-lubricated bearings offer fewer motor outages due to lubrication faults.

OPERATING RECORDS SAY: "41% fewer failures with Life-Line pre-lubricated bearings!" Life-Line motors placed in service throughout industry show a record of 41% fewer bearing failures than the best conventional motor (with conventional bearings) ever built by Westinghouse!

USERS SAY: "Life-Line bearings save me money." One motor user reports yearly lubrication costs of \$3.06 per motor on ordinary motor bearings. An industry average indicates a yearly cost of \$2.70 per motor a year. Multiply this by the hun-

dreds of motors in your plant and you'll see why pre-lubricated Life-Line offers you an opportunity to cut life costs of motors. Life-Line needs no lubrication. You save this cost.

Get all the facts on Life-Line motors. See for yourself how much you can save. Ask your Westinghouse salesman for copies of "Facts on Pre-Lubricated Bearings," (B-4378) and "Motor Costs" (B-4321), or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa.

J-21585



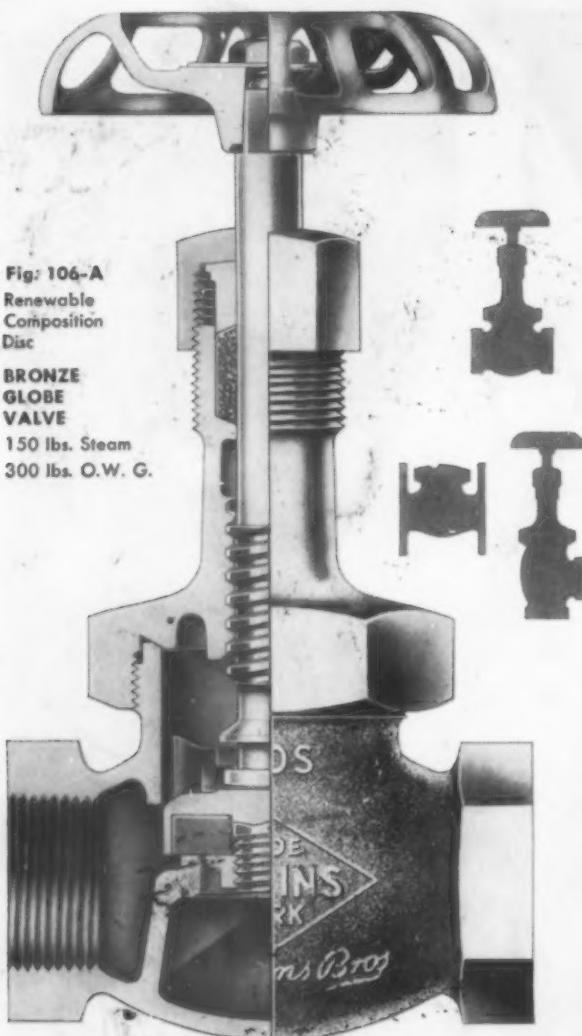


Fig. 106-A
Renewable
Composition
Disc

**BRONZE
GLOBE
VALVE**
150 lbs. Steam
300 lbs. O.W.G.



JENKINS
LOOK FOR THE DIAMOND MARK
VALVES

SINCE 1866 TRADE JENKINS MARK

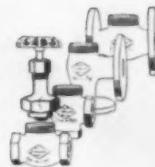
Jenkins Bros.

All these Valves . . from One!

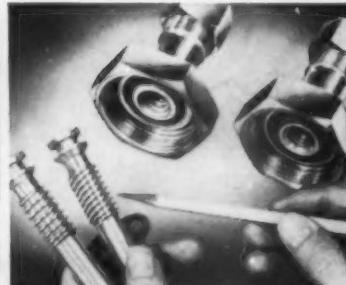
Valve combinations for 90% of industrial piping
assembled with 4 bodies and a handful of parts.

JENKINS FIG. 106-A "FAMILY"

Start with the standard Fig. 106-A. Trimming is interchangeable in Globe or Angle body, screwed or flanged.



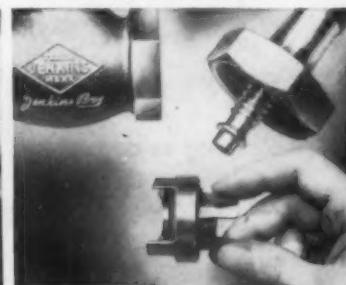
For Close Control — In throttling service, the nut which holds the disc in the disc holder is removed and replaced with Throttling Nut, Fig. 344.



For Quick Opening and Closing — Merely substitute the bonnet and spindle from Fig. 941, in which threads are pitched more sharply.



For Lift Check Service — Globe or Angle Bodies can be fitted with interchangeable Cap, Disc Holder, and Guide Disc Nut from Fig. 117A. Addition of spring from Fig. 655A provides spring loaded service.



For Stop & Check Service — Use the 106A trim, but substitute this spindle from Fig. 630A and replace the regular disc nut with the check valve guide disc nut.

Look over these pictures and see how easy it is to make up just the valve type you need, simply by interchanging parts. Think of the saving this means in maintenance expense . . . in reduced inventory of spare valves in your stockroom.

That's a big reason why the Fig. 106-A series takes top honors in any poll for valve preference. And Jenkins time-proved design, makes them the longest-lasting, lowest-upkeep valves that money can buy.

For example, see the heavy construction of the one-piece, screw-over bonnet. You can remove and replace it over and over again without distortion. See the extra size packing box,—and the perfectly machined threads on the heavy manganese bronze spindle, with more threads in contact with the bonnet, open or closed.

Remember, Jenkins Bros. is the originator of the renewable composition disc valve,—the *only* manufacturer of both valves *and* discs. For drop-tight, trouble-free performance, get acquainted with the Fig. 106-A "family". Despite their extra value, you *pay no more* for Jenkins Valves. Jenkins Bros., 100 Park Ave., New York 17, N. Y. Jenkins Bros., Ltd., Montreal. Sold through leading Industrial Distributors.

e
ss
y
n
r
t
d
n
i
or
A
ns
s